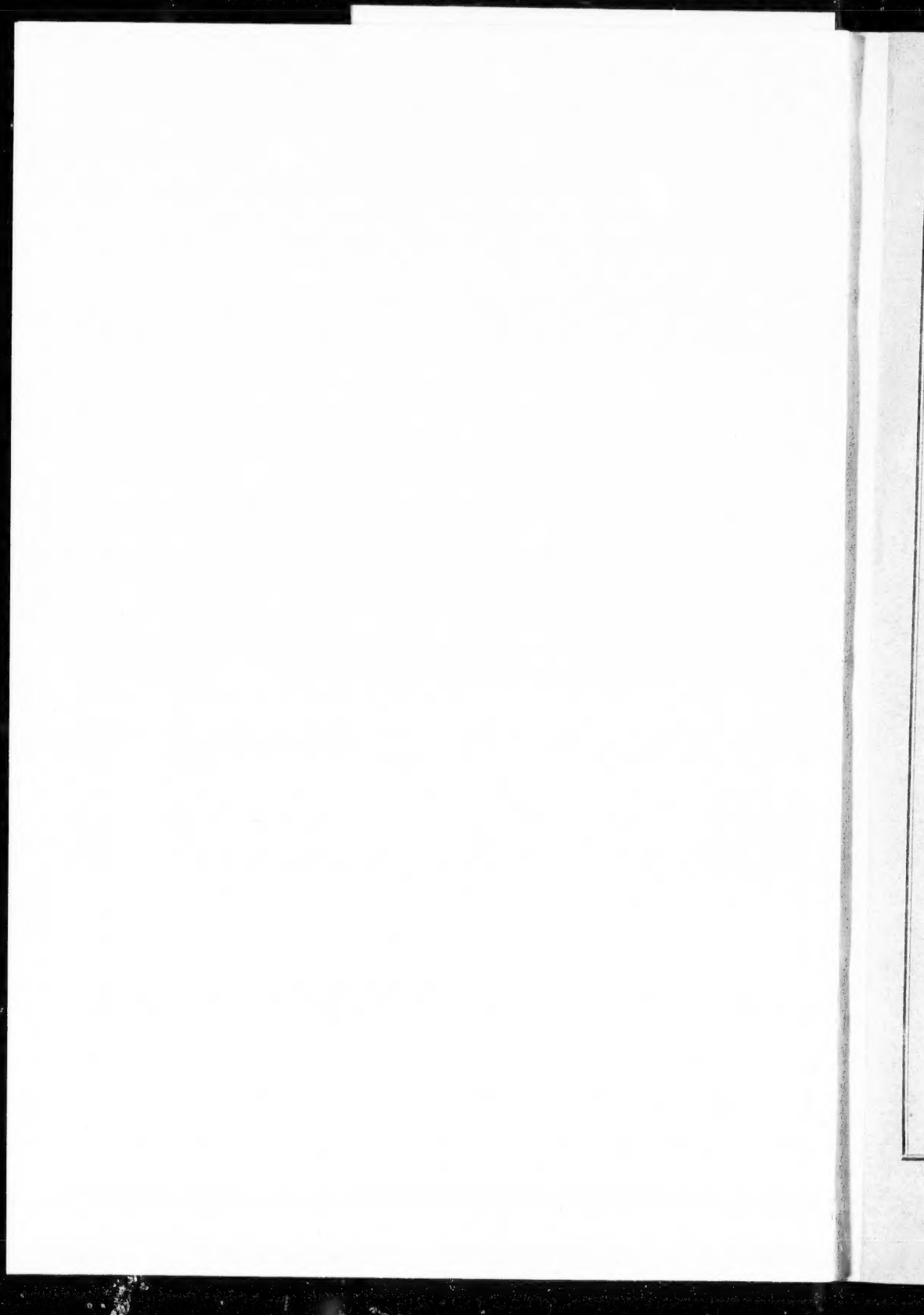




Rich Devlin

REPORT

Apr 9/03

TO THE

HON. J. H. POPE,

Acting Minister, Department of Railways and Canals,

ON THE NECESSITY OF

DEEPENING THE WELLAND CANAL

AND ON

TRANSPORTATION, COMMERCE AND CANAL TOLLS,

AFFECTING THE

ST. LAWRENCE WATER-ROUTE TO THE SEA-BOARD

BY

ROBERT C. DOUGLAS,

Assistant Engineer, Department of Railways and Canals.

OTTAWA:

Printed by MACLEAN, ROGER & Co., Wellington Street,
1884.

REPORT

HON. J. H. POPE

Member of the House of Commons

IN THE HOUSE OF COMMONS

DEEPENING THE WELLAND CANAL

AND THE

TRANSPORTATION, COMMERCE AND CANAL TOLLS

AS PASSED BY THE

ST. LAWRENCE WATER-ROUTE TO THE SEA-BOARD

ROBERT C. DOUGLAS

Member of the House of Commons

OTTAWA

Printed by MacLean, Harder & Co., Wellington Street

1881

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OTTAWA, July 21st, 1884.

THE HONORABLE J. H. POPE,

Acting Minister, Department of Railways and Canals.

SIR,—I have the honor to submit for your consideration a report, the result of investigations made under your instructions. This report embodies that submitted in February last, with additional statistics and statements, more serviceable in print, inserted. The renewed agitation for remission of tolls, and the decreased movement of cereals from the West to the Sea-board, for the first half of this year, have also been alluded to.

It was deemed unnecessary to quote, at each table, the authority from which the statistics given have been compiled. That compilation has been made from the reports of various trade and mercantile bodies, and the reports on the "Internal Commerce of the United States," by J. Nimmo, jun., Esq., Chief of the Bureau of Statistics, Washington, D.C.

To the following gentlemen, as well as others who may not be especially mentioned, the Department is indebted for reports furnished and other valuable information:—

To W. E. Fletcher, Esq., Superintendent, New York Produce Exchange; W. F. Wheatly, Esq., Secretary, Baltimore Corn and Flour Exchange; D. A. Cooney, Esq., Canal Statistician, Albany, N.Y.; J. L. McWhorter, Esq., Chairman Committee on Commerce, Oswego Board of Trade; W. J. Morgan, Esq., Buffalo, N.Y.; D. B. Smith, Esq., Secretary Toledo Produce Exchange; J. McIver, Esq., Secretary Detroit Board of Trade; Charles Randolph, Esq., Secretary Chicago Board of Trade, and W. J. Langson, Esq., Secretary Chamber of Commerce, Milwaukee.

I have the honor to be, Sir,

Your obedient servant,

ROBERT C. DOUGLAS,

Assistant Engineer, Department of Railways and Canals.

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THE URGENT NECESSITY OF DEEPENING THE WELLAND CANAL.

One of the principal reasons the St. Lawrence route, to the sea board, does not maintain its former proportion of the rapidly increasing shipments of cereals from western lake ports, is the large class of vessels plying upon the upper lakes which are unable, on account of the limited depth of water in the Welland Canal, to descend to Lake Ontario. This disadvantage is now seriously affecting the route, and has been operating against it for the last twenty five years, during which period each successive year has seen the size and carrying capacity of the upper lake craft augmented. Small vessels have been driven out of the transportation of cereals, ore, lumber, &c.; they have been forced to accept rates of freight in competition with the larger vessels which would barely pay running and living expenses and leave no balance for interest on capital, depreciation and repairs. To this cause is due the decadence of the Lake Ontario marine, both Canadian and American, it depending on the transportation of property from Lakes Michigan and Huron, unable, on account of the Welland Canal, to increase in size and carrying capacity, and compelled to compete with the lower rates of freight, and cost of transportation effected by the larger vessel upon rival routes.

Although, during the last twenty-five years, the large craft has exercised a most powerful discrimination against the St. Lawrence route, it may be asserted, its effects have been continuously felt for the last half century, and date from the completion of the original Welland Canal.

During the first enlargement of the Canal, in 1844, it was estimated there were navigating the upper lakes 224 vessels, with an aggregate tonnage of 23,868 tons. Of this number, 114 vessels, with an aggregate tonnage of 16,200 tons, were unable to pass through the canal. The first enlargement was no sooner completed than it was found necessary to increase the depth of water upon the mitre sills of the locks above that originally contemplated. The vessels continued to increase in size until, in 1860, there were 341, with an aggregate tonnage of 145,918 tons, which were either of too large dimensions, or drew too great a depth of water, to pass through the canal as enlarged. In 1870 the number had increased to 367, with an aggregate tonnage of 194,685 tons; in 1880, to 460, with an aggregate tonnage of 287,342 tons; and in 1883, to 557, with an aggregate tonnage of 392,808 tons. These computations, founded upon the registered tonnage of vessels, must, to a certain degree, be approximate.

Judging from lake vessels of a seaworthy type, sailing vessels of over 300 tons register, and propellers over 400 tons register, are assumed to be unable, fully loaded, to navigate the canal as first enlarged. Vessels of greater tonnage and carrying capacity were built, known as "Canallers," those under the necessity of transporting

the largest possible cargo, were of full model, tubs and unseaworthy. They, when driven from the St. Lawrence route, on account of low freight, and being unable to pay expenses, went to the rougher waters of Georgian Bay and Lake Superior, where business had been developed by railway construction, in which the large American carrier could not compete, the unseaworthy character of their build is shown by the disastrous wrecks and loss of life, which have already occurred.

Tabulating the previous figures, the following statement shows the number, and aggregate registered tonnage, of vessels which were, at different dates, unable to pass through the canal, also the marked increase in average registered tonnage of vessels above 300 tons.

Statement showing Number of Vessels and Aggregate Tonnage unable to pass the first enlargement of the Welland Canal.

Year.	Number.	Aggregate Registered Tonnage.	Average Tonnage.
1844.....	2	719	360
1860.....	341	143,918	422
1870.....	384	194,685	507
1880.....	460	287,342	625
1883.....	557	392,808	705

The partial completion of the second enlargement of the canal has admitted to the carrying trade between the Upper Lakes and Lake Ontario a number of sailing vessels and propellers, too large to navigate the old canal and too small to compete with the larger carriers. Of this class, 170 (trips to vessels) in 1882, and 237 in 1883, passed through the canal.

In 1859, the St. Lawrence route not maintaining its share of the western trade, and of the grain trade in particular, inquiries were instituted, by the Commissioner of Public Works, into the cause of its diversion to rival routes. In his report of that year he states, that of the number of vessels engaged in the grain trade of the lakes, one-fourth to one-third cannot pass through the Welland Canal, while nearly three-fourths of the propellers on the upper lakes, the class of vessels chiefly used in the grain trade, are too large to pass down to Lake Ontario, "and if it should be conclusively shown that the predominating cause of the diversion of trade is the fact that the size of the locks is not adapted to the class of vessels now in use upon the upper lakes, the enlargement of the Welland Canal would seem now to be as much a matter of necessity as was its construction in the first instance. Experience has proved, and it is now pretty well understood, that the cheapest, and most expeditious means of carrying freight, is by the large class of propellers from 600 to 1,000 tons burthen, a class entirely too large to pass the canal, and which is increasing in number every year, and is exclusively engaged in directing the course of trade on the upper lakes to Buffalo and Dunkirk to supply the Erie Canal, the New York Central and Erie Railways. It becomes a question of serious and immediate inquiry, whether the

advantage which the Welland Canal possesses by its commanding geographical position between the lakes, is not in a great extent neutralized by its want of capacity." This quotation is given as history repeats itself, the enlarged Welland Canal is now in nearly a similar position to the canal in 1860, when these words, equally applicable to the present circumstances, were written.

The dimensions of the locks, and depth of water upon the mitre sills, at the second enlargement of the Welland Canal were recommended by a Canal Commission in February, 1871. According to the annual list of merchant vessels of the United States for 1870, there were at the date of this decision, eighty vessels with an aggregate tonnage of 57,262 tons, which would draw loaded, over twelve feet of water, depth recommended; ten years previous, in 1860, there were twelve vessels with an aggregate tonnage of 10,134 tons, in the same category.

The following statement shows at different dates the number, and aggregate registered tonnage of, vessels drawing too much water for the scale of navigation decided upon by the Canal Commission for the Welland Canal, and in practical operation for the last two years:

Statement of Vessels unable to pass through the present Welland Canal at different dates.

Year.	Number of Vessels.	Aggregate Registered Tonnage.	Average Tonnage.
1860.....	12	10,134	845
1870.....	80	67,262	840
1880.....	201	108,351	897
1883.....	265	269,966	1,068

It is evident, that if in the past insufficient depth of water and small locks, discriminated against, and interfered with, the success of the St. Lawrence route, this cause is still existing, since the second enlargement confined chiefly to the depth of water rather than to dimensions of locks. This fact is shown by the following table to be as serious a disadvantage to the canal, now enlarged, as at any time in the past:

Statement of Vessels unable to pass through the Welland Canal in 1844, 1870 and 1883.

Depth of Water and Date.	Number of Vessels unable to pass.	Registered Tonnage.
Original canal at the date of the first enlargement, 1844. Depth of water, 7 feet.....	114	16,200
First enlargement at commencement of second enlargement, 1870. Depth of water, 10 feet.....	384	194,688
Completion of second enlargement, 1883. Depth of water, 12 feet....	255	269,966

There are, therefore, in 1883, some 75,278 more tons of shipping unable to pass through the Welland Canal, with 12 foot water, than in 1870, to pass through with 10 feet; besides, the tonnage has been greatly increased since the publication of the last annual List of the United States Merchant Marine.

The causes which led to this remarkable increase in size and carrying capacity of vessels were: the improvement and deepening of harbors, the excavation of a channel through the St. Clair Flats, and the deepening of what is known as the Limekiln Crossing, Detroit River, by the United States Government. There was also the great advancement in mechanical and marine engineering, whereby with improved equipments and machinery, the larger vessel can be handled with greater facility and with much less cost, in proportion to the cargo transported, than its smaller predecessor.

The cost of transportation having thus been reduced, freight rates have correspondingly declined, the average freight upon a bushel of wheat from Chicago to Buffalo was in the following years:

	Cents.
1861.....	11.53
1871.....	7.62
1881.....	3.40
1882.....	2.57
1883.....	3.40

The average freight for the same for the decade ending 1873 was 8.56 cents, and for that ending 1883 about 3.70 cents.

The effect of the increased carrying capacity of vessels causing the diversion of the Lake Ontario trade to Buffalo was more particularly felt by Oswego and other south shore ports. The purely American trade of the canal, was of the total traffic, in—

	Per Cent.
1850.....	51.3
1860.....	62.0
1870.....	55.5
1880.....	27.7
1881.....	24.6
1882.....	29.7
1883.....	39.2

In addition to the large vessels the reduced rates of transportation by rail, subsequent to 1870, rendered it cheaper for the consumer to obtain his supplies all rail, from the west, than by the small vessels *via* the Welland Canal; these two causes have reduced a business which, for a great number of years, was one-half the total to one-quarter in 1881. The increase of 1883 was no doubt due in some measure to the enlargement of the canal.

The following approximate statement shows the inability of the small vessels to compete with the larger, and the greater profits consequent upon increased carrying capacity.

*Statement of Expenses (Insurance Interest Wear and Tear not Included) Receipts for
Freight of various sized Vessels loaded each way, plying between Chicago and Buffalo.*

	Sailing Vessel, Capacity 21,000 bushels.	Propeller, Capacity 40,000 bushels.	Propeller, Capacity 90,000 bushels.	Propeller and Cons. Capac. 125,000 bus.
Freight.....	\$ 900 00	\$ 1,600 00	\$ 3,560 00	\$ 5,140 00
Expenses.....	707 00	1,167 00	1,730 00	2,920 00
Balance.....	193 00	433 00	1,830 00	2,220 00

To illustrate still further: take three propellers of 1,000 tons, 1,500 tons and 2,000 tons carrying capacity, and making an approximate calculation, including expenses, insurance and depreciation. If the low rates of freight now prevailing between Chicago and Buffalo are taken, averaging about \$1.50 per ton per round trip, we would have the following estimate:

Carrying Capacity.	Expenses— Insurance and Depreciation.	Freight, round trip.	Profit and Loss.
	\$	\$	\$
Propeller, 1,000 tons.....	1,600	1,500	100 loss.
do 1,500 do	2,000	2,250	250 profit.
do 2,000 do	2,400	3,000	600 do

These illustrative figures, the first about the present Welland Canal capacity, show a loss through insufficient depth of water, and the great disadvantage any water route must be under where the large vessel is unable to ply.

The following statements show the increase in carrying capacity of vessels since 1860, which has been commensurate with the decrease in business through the Welland Canal.

*Statement of the Number and Aggregate Tonnage of United States Sailing Vessels above
300 tons register.*

Year.	300 to 550 Tons.		550 to 800 Tons.		800 to 1,200 Tons.		1,200 to 1,600 Tons.		1,600 to 1,800 Tons.	
	No.	Total Tonnage.	No.	Total Tonnage.	No.	Total Tonnage.	No.	Total Tonnage.	No.	Total Tonnage.
1860...	271	99,913	3	1,951	1	969	.....	.....	.....	.....
1870...	222	80,948	30	17,668	2	1,833	.....	.....	.....	.....
1880...	214	80,372	81	53,857	21	18,627	1	1,444	.....	.....
1883...	219	84,163	91	59,966	21	19,059	7	9,839	2	3,367

*Statement of the Number and Aggregate Tonnage of United States Propellers above
400 tons.*

		400 to 800.		800 to 1,200.		1,200 to 1,600.		1,600 to 2,220.	
1860...	.....	58	33,871	7	5,991	1	1,223	.....	.....
1870...	.....	82	46,476	44	42,125	4	5,636	.....	.....
1880...	.....	45	26,619	58	48,249	30	40,371	10	17,803
1883...	.....	83	48,679	67	66,612	41	54,644	26	46,479

The increase in the capacity of steam tonnage is greater than sailing vessels. It would appear that steam, as upon the ocean, would soon monopolize the carrying trade of the lakes. Transportation by steam propellers towing one or several barge, or schooner, consorts, is rapidly increasing. The acme of cheap transportation may be said to have been reached in a tow which recently came into Buffalo—a propeller with three consorts, with a cargo of corn and taking an outward cargo of coal. The following statement shows the details of this tow:

Names of Vessels.	Inward Cargo.	Outward Cargo.
Propeller Edwards..	55,000 bush. corn.	1,540 tons coal.
Schooner Golden Age	93,000 do	2,500 do
do O. Foster.	67,000 do	1,850 do
do M. W. Page.	50,000 do	1,350 do
Total.....	265,000 do	7,240 do

"The steamer 'William Edwards' and her consorts 'Golden Age,' 'Charles Foster' and 'M. W. Page,' left port at 5 p.m. yesterday, bound for Chicago, carrying in all 7,300 tons of coal. As the tow got straightened into line outside the breakwater, with colors flying from every spar, the sight was a fine and an unusual one." None of these vessels could pass the Welland Canal with the present depth of water, and until the same sight may be seen upon the St. Lawrence there will be little hope of diverting to this route the trade naturally tributary to it.

LIGHTERAGE.

The harbour of Port Colborne having a sufficient depth of water for vessels of a greater draught than will pass through the canal, necessitates lightening a portion of the cargo, it being more economical to lighten the large vessel through the canal than to load, only, to the canal depth, or employ a smaller vessel. This lightening has been done for years previous to the present enlargement by a railway constructed between the lake outlets of the canal, at which places elevators have been constructed. A portion of a grain cargo is elevated at Port Colborne, spouted into cars, transported over the railway to Port Dalhousie, then elevated and spouted into the vessel after passing through the canal. The cost of lightening is obviously a tax upon the

total cargo shipped at western ports. This railway, its promoter, the late Hon. W. H. Merritt, has stated, was constructed to regain a portion of the trade diverted by the New York Central Railway. It was expected to portage, so to speak, the cargoes of large vessels unable to pass through the canal, and to lighten others drawing too much water.

The gentleman before mentioned, one of the principal advocates of canals, proposed to the Commissioner of Public Works, in 1860, that the Welland Railway and Canal should be placed under one management. He stated there was a decided superiority of railways with descending grades over canals in connecting natural waters; that the Commissioner had decided wisely not to increase the public debt by the enlargement of the present or construction of a new canal, until the relative expenditure of capital and cost of transit is fairly tested between canals and railways. Propositions were made lately to work the road in conjunction with the canal, or that the Government should purchase it. These propositions were not entertained. It is now under the control of the Grand Trunk Railway Company, by whom it is operated.

Lightening must be an essential feature of transportation by this route for some time. Any exorbitant charge by the railway would be of serious injury to the route at present, when large vessels are commencing to navigate the canal, and other means of lightening have not been provided. It was feared by the officers of the Ogdensburg and Lake Champlain Railway, which corporation has built several propellers, especially constructed for navigating this canal, that it would be in the power of the Grand Trunk Railway Company to exact charges for lightening, which might be burdensome. As will be seen from the letter of the President of the former railway, he wishes a special Government officer appointed to prevent favouritism or discrimination. There is little danger of excessive charges, the canal not requiring a railway to successfully operate it. A floating elevator at either end of the canal and barges would do the work at less expense than a railway. It would be economical for any company doing an assured large business through the canal to do its own lightening.

This business done by the railway in the past is as follows: in the report of the Commissioner of Public Works for 1859, it is stated that 14,713 tons, comprising the cargoes of thirty-two vessels, were carried by the railway. Of these, ten were unable to pass through the canal. The following statement of T. H. Merritt, Esq., gives the business in grain since 1860:

Statement of the Quantity of Grain Lightened by the Welland Canal Railway.

Year.	Number of Vessels.	Number of Bushels.	Year.	Number of Vessels.	Number of Bushels.
1860.....		69,517	1872.....	167	568,958
1861.....		181,601	1873.....	177	704,827
1862.....		503,636	1874.....	230	788,082
1863.....		702,270	1875.....	155	506,049
1864.....		342,372	1876.....	83	286,968
1865.....		561,985	1877.....	133	528,606
1866.....		565,802	1878.....	94	361,071
1867.....		569,835	1879.....	181	771,227
1868.....		499,990	1880.....	205	769,828
1869.....		684,257	1881.....	134	496,112
1870.....	172	717,416	1882.....	8	87,871
1871.....	268	1,048,983	1883.....	64	622,721

The foregoing table shows the falling off in business, at the opening of the enlargement, in 1882, whereby all small vessels heretofore requiring lightening, passed through without that necessity. The year 1883 marks the new era upon the canal of the large vessel, the lightening of 64, embraces as large a quantity as 200 vessels, previously. This discrimination against, or tax upon the St. Lawrence route, will be felt until deeper water is afforded, as there are no vessels on the lake doing a profitable business, which do not draw more than 12 feet of water, loaded.

The enlarged Welland Canal was opened for navigation in 1882. Until the completion of the new aqueduct, the draught of water of vessels navigating the canal is dependent upon the depth of water in the present aqueduct. Except during north-east and easterly winds, when the level of the lake at Port Colborne was depressed, and consequently the level of the water at the aqueduct, the sluice gates at the entrance of the canal not being in position, there has been during the last two seasons of navigation fully 12 feet of water. With large steamers, if there is not some mechanical appliance adapted to warp them in and out of the locks, 12 feet water on the mitre sills is practically 11 feet 3 inches, or at most 11 feet 6 inches navigation. Propellers using a screw some 10 feet in diameter, when steaming through a narrow space, or in and out of locks, the tendency is to force the water forward, the revolution of this large screw creates a suction, drawing the water backward, the vessel settles down, particularly the stern, which strikes upon the mitre sills, and, as has been frequently done, cuts the cables closing the gates. To prevent this it is necessary for steamers of the full capacity of the lock, that there should be some 6 or 9 inches of additional depth of water, or approximately, to obtain a free 12 feet navigation, requires 12 feet 6 inches of water on the mitre sills. With these facts in view during the last two seasons, there has been, although imperfect on account of the aqueduct, a 12 feet navigation through the Welland Canal.

On being requested to make this investigation, the Superintendent of the Welland Canal was instructed to prepare a statement, showing in detail, the number of

ailway.

vessels, their registered tonnage, dimensions, draught of water loaded, number of tons lightened, and other information concerning vessels requiring to be lightened to pass through the canal since its opening, in 1882. Similar statistics are to be furnished each month of the present season of navigation, which will be valuable to demonstrate at any time the great injury to this route from insufficient depth of water in the canal.

The following statements have been compiled from the above information forwarded to this office.

The business in large vessels, in 1882, was merely experimental. Two propellers, of some 1,200 tons carrying capacity, made four trips through the canal. The partial success of the route being demonstrated, the Ogdensburg and Lake Champlain Railway had constructed a propeller especially for navigating the canal, named after the President of the Company, the "Walter L. Frost." This propeller has a registered tonnage of 1,203 tons and a carrying capacity of some 1,600 tons. Her first trip was made in July, 1883, and she may be called the pioneer steamer of the route. Two more steamers have been added by this Company, of slightly greater carrying capacity, built after one season's experience of navigating the canal with the "W. L. Frost." They may be said to be the most excellent models of marine architecture adapted for navigating the canal at present on the lakes.

Statement shewing the Number of Vessels, total Cargoes entering Port Colborne Harbour, total Quantity Lightened, total Tons transported through Canal, total Cost for Lightening, and total Demurrage for the Seasons of Navigation, 1882, 1883, and in May, 1884.

Name of Vessel.	No. of Trips.	Total Cargoes Entering Port Colborne.	Total Tons of Cargo Lightened.	Total Tons of Cargo through Canal.	Total Cost of lightening	Total Demurrage.
<i>Propellers, 1882.</i>					\$ cts.	hours. min.
J. C. Gault.....	3	3,679	1,129	2,550	705 28	Not stated. do
Business.....	1	1,500	508	992	296 35	
Total steam.....	4	5,179	1,637	3,542	1,001 61	
<i>Sailing Vessels, 1882.</i>						
Glenora.....	2	2,924	504	2,420	293 73	
H. Bissell.....	1	1,020	186	834	123 80	
Total sail.....	3	3,944	690	3,254	417 53	

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*Statement showing the Number of Vessels, total Cargoes entering Port Colborne Harbour,
total Quantity Lightened, etc., etc., etc.—Continued.*

Name of Vessel.	No. of Trips.	Total Cargoes En- tering Port Colborne.	Total Tons of Cargo Lightened.	Total Tons of Cargo through Canal.	Total Cost lightening.	Total Demurrage
					\$ cts.	hours. min.
<i>Propellers, 1883.</i>						
Northerner.....	10	13,750	4,874	8,876	3,481 18	118 20
D. C. Whitney.....	1	1,708	683	1,025	487 92	15 20
J. R. Whiting.....	1	644	96	548	68 54	4 00
Jas. Davidson.....	3	5,488	2,148	3,340	1,427 26	44 50
D. M. Wilson.....	2	1,923	481	1,442	379 69	16 15
Jim Sheriff.....	1	1,043	152	891	108 76	8 55
Oneida.....	7	5,692	947	4,745	675 20	29 48
Myles.....	4	4,422	920	3,502	693 45	21 50
W. L. Frost.....	8	11,670	2,655	9,015	1,896 96	66 15
Roanoke.....	8	7,862	1,485	6,377	1,660 18	53 30
Tecumseh.....	2	2,141	744	1,397	697 10	14 45
Total steam.....	47	56,343	15,185	41,158	10,976 24	393 48
<i>Sailing Vessels, 1883.</i>						
Higgie.....	1	887	120	758	115 33	6 25
Halstead.....	4	3,951	410	3,541	332 58	16 35
Homer.....	1	879	231	648	206 35	8 20
Parana.....	3	2,302	384	1,918	330 36	12 40
Wayne.....	1	1,358	333	1,025	238 20	20 20
Manitowoc.....	1	1,060	103	957	59 95	5 00
Angus Smith.....	3	2,629	528	2,101	403 11	14 35
C. B. Jones.....	1	952	108	844	97 63	7 30
Total sail.....	15	14,018	2,226	11,792	1,783 51	91 25
<i>Summary, 1882.</i>						
Steam vessels.....	4	5,179	1,637	3,542	1,001 61	
Sailing vessels.....	3	3,944	690	3,254	417 53	
Total.....	7	9,123	2,327	6,796	1,419 14	
<i>Summary, 1883.</i>						
Steam vessels.....	47	56,343	15,185	41,158	10,976 24	393 48
Sailing vessels.....	15	14,018	2,226	11,792	1,783 51	91 25
Total.....	62	70,361	17,411	52,950	12,759 75	485 13
<i>Propellers, Month of May, 1884.</i>						
W. A. Haskell.....	2	3,215	1,139	2,076	813 42	31 45
W. L. Frost.....	1	1,560	428	1,132	305 58	10 40
Myles.....	1	1,200	384	816	223 75	10 20
Total.....	4	5,975	1,951	4,024	1,342 75	52 45
<i>Sailing Vessels, Month of May, 1884.</i>						
C. B. Jones.....	1	952	136	816	97 42	7 15

rne Harbour,

Total Demurrage	
hours.	min.
118	20
15	20
4	00
44	50
16	15
8	55
29	48
21	50
66	15
53	30
14	45
393	48

6	25
16	35
8	20
12	40
20	20
5	00
14	35
7	30
91	25

393	48
91	25
485	13

31	45
10	40
10	20
52	45

7 15

It may be seen from the above statement, that in 1882 of seven vessels of total of cargoes 9,123 tons entering Port Colborne harbour, 2,327 tons required to be lightened, or 25½ per cent. The cost of lightening was \$1,419.14, which, less the canal tolls, would be a tax of 10 cents per ton upon the total cargoes shipped at western ports.

In 1883 there were 62 vessels with aggregate cargoes of 70,361 tons. Of this quantity 17,411 tons required to be lightened, some 25 per cent. of the whole. The cost to the vessels was \$12,759.75, or, less the canal tolls, a tax of 13 cents per ton upon the total tons of products shipped.

If the smaller vessels are omitted and the propellers over 1,000 tons register, of full canal capacity, are taken, some 30 per cent. of the cargoes require to be lightened, at a tax of 15 cents per ton upon the cargoes.

The total detention of vessels or demurrage on account of this necessity of lightening was, in 1883, some twenty days, a considerable loss to the large class of vessel.

Of the propellers which have passed through the canal in the month of May, 1884, some 32·7 per cent. of their cargoes required lightening, at a tax of 16 cents per ton on the whole cargoes. The loss to the revenue of the canal, since the opening of the enlargement to 1st June, 1884, has been \$4,365.00.

Attention is drawn to the statement upon the following page, in which some details are given of the vessels enumerated in the preceding table, showing the registered tonnage, carrying capacity, draught of water loaded, and the average amount of cargo required to be lightened each trip.

Statement of Registered Tonnage, dimensions, number of trips, average cargo, and average draught of water of vessels entering Port Colborne Harbour, average cargo lightened, average depth of water in aqueduct, average cost per trip for lightening, average demurrage of vessels requiring to be lightened to pass through the enlarged Welland Canal, during 1883 and month of May, 1884.

PROPELLERS.

Name of Vessel.	Registered Tonnage.	Dimensions.			No. of Trips.	Average Cargo entering Port Colborne.	Average mean Draught of Water.	Average Cargo Lightened.	Average Depth of Water in Aqueduct.	Average Cost per Trip for Lightening.	Average Demurrage, Ports Colborne and Dalhousie.
		Length.	Beam.	Hold.							
		Ft.	Ft. in.	Ft. in.		Tons.	Ft. in.	Tons.	Ft. in.	\$ cts.	h. m.
Northerner.....	1,038-33	237	33	16	10	1,375	14 4	487½	12 8	348 12	11 03
D. C. Whitney.....	1,013-22	246	40	6	1	1,708	14 4	693	11 11½	437 92	15 20
J. R. Whiting.....	1,438-32	145	26	16	3	1,844	12 7½	96	13 11½	68 54	4 00
Jas. Davidson.....	1,202-00	235	37	6	2	1,929	15 0½	716	12 8½	475 75	14 37½
D. M. Wilson.....	592-00	175	31	21	2	861	12 9	240½	12 4½	189 86	8 07
Jim Sheriff.....	562-00	200	.....	.....	1	1,043	12 2½	152	11 4½	108 76	8 55
Onaida.....	1,070-50	215	31	12	7	813	12 11	135	12 4½	96 46	3 58
Myles.....	929-00	179	33	6	5	1,124	13 8	261	12 6½	183 44	6 25
W. L. Frost.....	1,203-00	250	37	24	9	1,470	13 2½	342½	12 6½	244 72	8 33
W. L. Frost.....	1,203-00	257	35	14	8	983	13 1½	185½	12 9	132 52	6 42
Teumisch.....	530-00	.....	.....	.....	2	1,070	14 2	372	12 0½	347 92	7 22
W. A. Haskell.....	1,441-00	265	37	{ 9 6 16 6 }	2	1,607½	13 11	569½	12 5½	406 71	15 53

SAILING VESSELS.

		Length.	Beam.	Hold.							
		Ft.	Ft. in.	Ft. in.		Tons.	Ft. in.	Tons.	Ft. in.	\$ cts.	h. m.
Higgle.....	418-00	171	31	4	1	887	12 7	139	12 2	115 33	6 25
Halstead.....	496-53	.....	.....	.....	4	987½	12 6½	102½	12 2	82 33	4 09
Homer.....	455-03	.....	.....	.....	1	879	13 6½	231	12 2½	206 45	8 20
Parana.....	406-45	.....	.....	.....	3	767	13 0	138	12 3	110 12	4 13
Warne.....	674-23	197	35	14	1	1,358	13 6½	333	11 11½	338 20	20 20
Maintown.....	507-14	225	29	9	1	1,060	12 7	103	12 7½	59 97	5 00
Angus Smith.....	581-71	182	32	13	3	878	13 0	176	12 7½	134 37	4 52
C. E. Jones.....	470-00	168	33	12	2	952	12 9	122	12 5	97 03	7 22

The foregoing table proves conclusively the insufficient depth of water in the canal. It will be seen that the depth of water in the aqueduct has been fully 12 feet; that propellers of the small registered tonnage of 436 tons and sail vessels of 406 tons required to be lightened.

We are now in a position to determine precisely the effect of this limited depth of water upon vessels built especially for traffic through the canal. As before stated, the Ogdensburg and Lake Champlain Railway have placed upon the route three propellers. They were constructed by the Detroit Dry Dock Company, the last two after the experience of one season. It is to be presumed that the marine architecture of the latest built would be of a character best adapted to lake and canal navigation. These vessels are 265 feet in length, 37 feet in breadth, and have double decks, 16½ feet and 9 feet respectively, and draw about 14 feet of water loaded, having a carrying capacity of 1,680 tons, or 60,000 bushels of corn.

The following statement shows the effect of insufficient water, and the discrimination in favor of Buffalo through this cause, when propellers of full lock capacity and suitable model are employed :

	Tons.
Propeller, registered tonnage, say.....	1,450
“ enters Port Colborne Harbour, cargo.....	1,680
“ requires to lighten to pass through canal.	644
Transports through canal.....	1,036
Percentage of amount lightened to total cargo.....	38.4 p.c.
Cost of lightening.....	\$460 00
Demurrage, say.....	70 00
	<u>\$530 00</u>
Deduct canal tolls, 644 tons at 20 cents.....	128 80
Net cost to vessel lightening.....	<u>\$401 20</u>

This cost adds 24 cents a ton to the freight, a discrimination in favor of the Buffalo route of that amount, and greater than the tolls.

It must be evident that instead of crying out for the abolition of tolls, it would be more consistent, with a knowledge of what are the true interests of cheap transportation by the St. Lawrence route, to evince greater foresight and agitate for the deepening of the Welland Canal.

FOURTEEN FEET NAVIGATION WITH TOLLS PREFERABLE TO TWELVE FEET WITHOUT.

When visiting the different lake ports interested in the St. Lawrence route, the opinions of Boards of Trade, persons engaged in shipping and doing business in cereals, were obtained as to the relative advantages of a free canal system or increased depth of water in the canals.

An answer was requested to the following questions, among others, from the Oswego Board of Trade :

Wayne.....	674 23	197	35	14	3	767	13 0	531	648	12 24	263 45	8 20
Mainwoc.....	507 14	225	29 9	13	1	1,358	13 6	333	639	12 3	110 12	4 13
Angus Smith.....	581 71	182	32	13	1	1,060	12 7½	103	1,025	11 114	238 20	20 20
O. B. Jones.....	470 00	168	32	12	2	876	13 0	176	957	12 7½	59 97	5 00
					2	952	12 9	122	700	12 7½	134 37	4 52
									830	12 5	97 03	7 22

The tonnage through the Welland Canal, between ports in the United States, has decreased from 1869 to 1882—In vegetable food, 337,500 tons to 64,000 tons; in heavy goods, 236,000 to 177,000. A large proportion of this decrease is due to Oswego. State reasons?

"The reasons for the decrease of tonnage are, in my judgment, as follows:—The lowering of tolls on the Erie Canal worked against the Ontario and Oswego route to New York, because the lowering was, as from Buffalo, on 365 miles of canal, whereas, from Oswego it was on 205 miles, consequently the toll decrease was in favor of Buffalo in that proportion. Time, distance or price of freight did not meet or overgo the toll decrease.

"Also, the increased size and tonnage of vessels and steamers used on the Buffalo route gave that route a great advantage over the small canal vessels which could go to Oswego. A vessel carrying 50,000 bushels can make a good paying freight, when an 18,000 bushel vessel would lose, let the price of freight be what it might. Consequently, Oswego lost her entire western transit trade.

"Also, Oswego has lost by fire all her flouring mills but three. None were rebuilt, so the amount of wheat formerly ground at Oswego is not wanted.

"They were not rebuilt, for the reason that it cost too much to bring wheat to Oswego in small vessels.

"The Oswego Starch Company has found it cheaper to bring its corn by rail rather than use the water route.

"The up merchandise trade could not pay the freight of the Oswego route. Consequently, what the railroads did not take went mostly west, *vid* Buffalo."

In 1871, the Oswego Board of Trade, in answer to questions of Canal Commissioners on the improvement of the inland navigation of Canada, recommended that the scale of navigation for the enlarged Welland Canal should be—locks 250 feet x 45 feet, and 14 feet over mitre sill.

Since that date the canal has been enlarged, the locks adapted for 14 feet over mitre sill, 270 feet long and 45 feet wide, larger than recommended by 20 feet in length; the prism of canal has only been designed for a 12 feet navigation. To give 14 feet would require considerable expenditure.

Whether would the deepening of the canal to pass vessels drawing 14 feet of water or the abolition of tolls be most advantageous to Oswego in competing for the transport of cereals from the West to tide water or the Atlantic States?

"The real opinion of the Oswego Board of Trade was strongly in favor of locks 300 feet long, 45 feet wide, and 16 feet on the mitre. Some parties, mostly old men, made fight against the above figures, and it resulted as stated. The young men, who foresaw what was coming, were beaten. Their judgment was correct. The new Welland Canal is too small. Had it large locks, as stated, 300 x 45 x 16, it would soon control the entire western trade in the navigable season of the year, in spite of the railroads and the Erie Canal free of tolls. A craft carrying 100,000 bushels could then reach Lake Ontario, which is as large as can ever be used to cross St. Clair and go into, or from, any western port.

"But these large locks cannot now be had. All that can be done is to give 14 feet water over mitre. This should be done at any cost. The thing is to get trade down to Ontario, and 14 feet depth would do a great deal that way.

"If the canal is to have only 12 feet water over mitre, it will be a failure, as it is now, in diverting trade from the Erie canal and the railroads, to Lake Ontario.

"In my judgment, it would be far better to deepen the canal to pass 14 feet draught and let the tolls remain as they are. A small reduction could, however, be made without losing any revenue. The largest craft is what is wanted. Twelve feet water is about 40,000 bushels; 14 feet water would be about 60,000 bushels. Give the trade the large craft and the tolls are not of much consequence."

Mr. McWhorter, Chairman of the Committee on Commerce, a gentleman of long experience, conversant with transportation upon the lakes and considered an authority upon the subject, in a letter to my address, December 15th, 1883, in addition to the above, states: "The reply to these questions embodies the views of most of the commercial men of this city—I may say of all of any noted position.

"The question of tolls on the Welland, though of course we should be glad to see them reduced or taken off, is not looked upon by us as a matter of any great importance. What is wanted is the means of placing the largest possible cargo on Lake Ontario from Lake Erie. The larger the cargo the cheaper it is moved, and the easier it is to compete with the United States railways and the Erie Canal, consequently, as 14 feet water would pass at least 60,000 bushels, that depth of water would be far more effectual in controlling the trade from the West and in competing with the railroads and the Erie Canal, than would 12 feet of water, which would only pass, say, 40,000 bushels.

"Canada had the opportunity to control the entire Western trade for export had the Welland Canal been altered and enlarged so as to pass 100,000 bushels cargo when completed. The route to New York *via* Erie Canal and railways could not have competed with the Welland and St. Lawrence route when completed *via* Montreal, for the transport of produce, the St. Lawrence canals being left as they now are.

"Of course, that is now out of the question, and the only thing left is to make the Welland as large as is possible now; 14 feet of water over mitre will do a great deal, but to leave the canal with only 12 feet over mitre is looked upon here as making another failure, or a worse one than was the first enlargement. Such a canal cannot compete with the United States water or rail routes. What we, at Oswego, and I may say Ogdensburg, want, is to be able to compete with Buffalo for the trade which must go to New York or Boston for domestic consumption. Fourteen feet will enable us to do that to a very great extent, and we, at Oswego, will soon build up a great transit trade in produce intended for Eastern consumption and not for export.

"We hope, most seriously, Canada will give us 14 feet on mitre and 15 feet in the prism of the Welland Canal.

"We shall be satisfied to pay tolls if we can have cargoes passed of 60,000 bushels or more."

As to Mr. McWhorter's remarks with reference to the trade they wish to build up, the domestic consumption of the Eastern States, that trade can never, under present international regulations, go to Montreal, neither can Oswego or other American ports upon Lake Ontario, or the St. Lawrence, do an export business of any great extent. They have never done it in the past, while Montreal's only business is in export, principally to Great Britain, therefore the interests are identical, as every bushel of grain for domestic consumption in the Eastern States, diverted from Lake Erie to Lake Ontario, paves the way for another bushel for export. When there was some agitation, in 1882, in favor of free canals upon the St. Lawrence route, an unofficial memorandum covering this ground, of which the following is a copy, was addressed to the late Minister of Railways and Canals:

In reference to resolution of the Toronto Corn Exchange, 12th December, 1882, that tolls be abolished only upon American vessels carrying freight to Canadian ports.

The acceptance of that resolution would destroy one of the principal objects in the abolition of tolls. That object is to divert the tendency of trade to Buffalo for transport by the Erie Canal and railways leading therefrom, through the Welland

Canal. This point once gained, the St. Lawrence route would be in a far better position for competition for the transport of all cereals that may float on Lake Ontario.

It is obvious that if grain is diverted from Buffalo to Ogdensburg, if elevator and storage capacity were provided at Prescott, it would be less difficult to change across the river and ship by barges or rail *via* Canadian route than to divert from Buffalo to Prescott direct; or if a propeller once reaches Ogdensburg with any grain that would have taken the Buffalo route it would be a great advantage to the St. Lawrence route. A similar proposition applies to Oswego and Kingston. If grain is diverted to the former city, Kingston is in a better position to capture that trade than from Buffalo direct. By the proposition of the Toronto Corn Exchange we would have only Canadian capital and enterprise at work to divert the trade of Buffalo. By free canals to all American vessels, we would have, in addition, the American capital and enterprise of the towns and railways leading therefrom on Lake Ontario and the River St. Lawrence to assist in this object.

The report of the Erie Canal Commissioners, in 1811, stating that "articles for exportation, when once afloat on Lake Ontario, will go to Montreal unless our British neighbors are blind to their own interests," still holds good. The chief element in the success of our canals is that articles for transport should float on Lake Ontario, whether bound for American or Canadian ports.

Mr. McWhorter, in a letter dated the 16th January, 1884, again states: "Since I wrote you quite an anxiety has arisen among our commercial men as to having the greatest possible depth of water over the Welland lock mitres and in the canal prism. One and all, both here and at the Eastward say, 'give us the deepest water and keep on the canal tolls.'"

It may be stated here that from the earliest inception of the Welland Canal, when it was operated by a company, and after the Province of Canada assumed control and enlarged it, the representations of the business men of Oswego always received favorable consideration, the interests of the south shore of Lake Ontario, and the River St. Lawrence, being identified with the success of our canal system. This fact was recognized by the New York Legislature, the Western section and Buffalo's interest being all powerful, continual discriminations were made in favor of Buffalo, bounties arranged adverse to the interests of Oswego, and every endeavor made to prevent the Lake Erie trade descending to Lake Ontario. Representations made to the Board of Works of this legislative action received favorable consideration from the Board. Before the construction of the Erie Canal, the route from Albany to the West was by Oswego, a primitive and imperfect navigation, and a portage around the Falls of Niagara. The first surveys for a canal were made here. Its construction was strongly resisted by the prominent advocates of the Erie Canal, with what prescience time has shown.

Cleveland, Ohio.—This city had formerly a considerable trade in cereals with Montreal. The discrimination of railways has carried the grain past that port. It has, therefore, lost importance as a receiving and shipping point. A prominent shipper informed me that he formerly shipped grain through Montreal, but the high

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freight rates and lack of return cargoes had interfered with the business on this route, and little had been done for several years past.

A large industry in this city is the building of iron propellers. There are a number of the larger class of vessels owned. In conversation with one of the principal vessel owners, he remarked that he had no doubt that it would be more advantageous to the vessels to pay moderate tolls, with a 14 feet navigation, than 12 feet with free canals.

The Hon. G. H. Ely, State Senator for Ohio, one of the prominent advocates for the improvement of the northern water-ways, the enlargement of the St. Mary's Canal and the deepening of the St. Mary's River, one who has always been active in pressing the Federal Government for appropriations for that purpose, informed me that he estimated the increased depth of water from 12 to 14 feet in the St. Mary's River had, on the transportation of iron products, in 1882, resulted in a saving of from \$700,000 to \$800,000. This gentleman was also one of the principal opponents to the efforts of the railway companies to obtain authority from the Federal Government to bridge the Straits of Detroit, to the lasting injury of the lake marine and commerce. In a speech before the Select Committee on Commerce of the United States Senate and House of Representatives, in opposition to the passage of a Bill for that purpose, he stated the value of the lake marine is estimated at \$50,000,000 to \$60,000,000, that the State of Michigan alone moved upon those waters, in 1879, in five products only, to the value of \$30,463,114. These products were salt, copper, iron ore, pig iron and lumber.

I give these figures to show that if at present our lake marine is insignificant, we have, in the products of the North-West and the north of lakes Superior and Huron, the capability of building up a lake marine and commerce. The commerce of the great lakes, in the opinion of a commission of United States Engineers, appointed to report upon the the subject of bridging the Detroit River, was of more importance than the foreign commerce of the United States.

Toledo, Ohio.—A lake port standing second in its shipments of wheat and corn by the St. Lawrence route. In conversation with the principal shippers and vessel owners, six in number, they one and all agreed that a 12 feet navigation was inefficient, as nearly all vessels doing a profitable business upon the lake required over 12 feet of water, and that tolls with 14 feet would be far more advantageous to the trade. They also objected to lightening, as with an assorted cargo of different graded grain it was liable to be mixed in the elevator.

The official opinion, in a letter to my address, from the Secretary of the Toledo Produce Exchange, and in answer to similar questions, interrogated the Oswego Board of Trade, states:—

"But the delay may not be wholly lost time, since it has given me more time to consult more freely with interested members of the association, whom I find quite generally to coincide with me in the opinion that an increased depth of water in the Welland Canal to 14 feet, with a slight toll on the products transported, would increase its strength and importance as a competing route in a far greater ratio than if the depth of water is continued at 12 feet with an entire abrogation of tolls. I think

this theory finds its natural defence in the great increase in the capacity of the grain carrying marine of the lakes. All new vessels, steam or sail, are large, and the capacity of the vessel is the leading factor in regulating freights. The present plans for improving our own channel to the lake contemplated a depth of 16 feet, part of which is already secured."

Detroit, Michigan.—Detroit stands fourth as a lake shipping port of grain by the St. Lawrence route. The Secretary of the Detroit Board of Trade thus replies to the same questions as previously quoted: "I find that the majority of those actively engaged in the shipping business and best qualified to form an opinion, incline to the belief that the West would prefer to see a depth of 14 feet in the Welland Canal, subject to tolls, than the 12 feet on mitre sill free of tolls."

Chicago, Ill.—This port is the largest shipping port of cereals by the St. Lawrence route. The Secretary of the Chicago Board of Trade replies to a similar question: "I have conversed with several gentlemen supposed to be capable of giving an intelligent opinion on the question as to which would be most conducive to an increase of business through the Canadian canals, a depth of 14 feet with, say, $\frac{1}{2}$ cent per bushel tolls, or 12 feet and no tolls, and, without exception, the 14 feet with $\frac{1}{2}$ cent toll is preferred, on the theory that vessels drawing about 14 feet can carry grain to Lake Ontario more than $\frac{1}{2}$ cent per bushel less than vessels only loaded to 12 feet."

Milwaukee, Wis.—This port occupies the third place in the list of grain shipping ports by the St. Lawrence route. The official opinion, from the Secretary of the Chamber of Commerce, was not obtained. In conversation with the principal grain and shipping men, some of whom were Canadians, all were of the opinion that 14 feet navigation, with tolls, was preferable and more advantageous in shipping by the route than 12 feet without tolls.

Ogdensburg, N. Y.—This port, on the St. Lawrence, has done a large business through the canal which was nearly ruined by the small vessel. Since the enlargement three vessels will transport nearly as large a quantity as fifteen which formerly plied upon this route, at one-third the expense.

Opinion of W. L. Frost, Esq., President of the Ogdensburg and Lake Champlain Railway: "As to my views on the subject, in brief, they are that you should deepen the Welland Canal to 16, 18 or 20 feet if possible; to stop at 14 feet, while it will help, will not put the route on a level with the Buffalo and Erie Canal, with their free canals.

If the Welland Canal can be deepened to 20 feet you would command the trade of the lakes, in my opinion, and as you decrease from that point you only come into competition with Buffalo and will only be partially successful. Any increase in the depth is a move in the right direction, but I trust that you will not stop at less than 16 feet.

In the matter of tolls and general expense at canal lighterage, and all other matters as they exist to-day, they are altogether too burdensome to induce heavy tonnage, either to Canadian or American Lake Ontario ports.

These heavy tolls with the present depth of water are surely driving grain from Montreal, Kingston and Ogdensburg, directly to Buffalo and Erie Canal.

All this should be immediately remedied, and while the present depth of water exists, 11 feet 9 inches being about as low as it is safe to load to, all tolls should be taken off and lighterage reduced to a nominal sum.

The Dominion Government should also appoint special officers over the Welland Railway, to see that no discrimination or favoritism is exercised. In short the Welland Canal should be put on the same basis as the United States Sault Ste. Marie Canal.

In respect to our future plans, I have to say that this railroad company, and its owners, believe that the Welland Canal route can be made the best and cheapest future route for transporting grain, and other western products, to the Canadian and Atlantic seaboard. We believe that the interests of the Canadians are the same as our own, that if properly handled we can each have and take all the business that either, or both, want without interfering with each others interests.

The more grain that can come by the Welland Canal, whether to Kingston, Montreal, Ogdensburg or other Lake Ontario ports, the better for all our interests in the end.

This may seem a singular idea to you, but I think reflection will convince your authorities that our interests are the same, and we must move together as against Buffalo and Erie Canal route. Last year the Detroit Dry Dock Company built for our line the pioneer steamer of the Welland Canal route, and this year they have added two more of greater capacity.

These three steamers are the "Walter L. Frost," "William A. Haskell" and "William J. Averell" and have a tonnage capacity equal to or exceeding fifteen of the steamers of the old Northern Transportation Company.

They will carry 53,000 and 60,000 bushels of corn respectively, and are perfect steamers in every respect. If we can see any encouragement for deeper water in the canal next year, and free or reduced tolls, I think our policy will be to add three or five similar steamers in 1885, and so on, until we get our full quota. We intend and have laid our plans to carry (4,000,000) four million bushels of corn, *via* Ogdensburg, in 1884.

As this answers your inquiries with papers from Ogdensburg, I will only say, in conclusion, that I trust you will succeed in convincing your Government of the necessity of freeing the canal as it exists to-day, and giving greater depth of water for the future."

Subsequent to the commencement of the present enlargement, strong representations, made by parties conversant with this subject and interested in the success of our national waterway, fortunately led to the permanent structures, both upon the Welland and St. Lawrence Canals, being constructed for an eventually greater depth of water.

On a canal situated as the Welland, with numerous locks in close proximity to each other, and where there is great difficulty in obtaining sufficient length between the locks, longer locks were, from an engineering point of view, perhaps, impracticable upon the present alignment. There is also the time which would be consumed in filling larger locks and locking vessels, through numerous locks, which would not be felt in a canal with less lockage, such as the Sault Ste. Marie Canal, with one lock, and that sufficiently large to admit of more than one vessel. To the depth of water these objections do not apply, no greater length of time being required to lock a vessel drawing 16 feet than one drawing 12 feet.

The principal reason of the decay of our lake marine, and a principal factor in the little success attained by the St. Lawrence route, in no degree commensurate with the expenditure upon it, has been shown to have been the large vessels. The only hope of building up a lake marine is in the development of the mineral and other resources of the north shores of Lakes Huron and Superior, and in the transport of the surplus cereals of the North-West.

The large vessel requires a long voyage, such as Chicago or Duluth to Buffalo, or Chicago and Port Arthur to Kingston. To navigate safely the upper lakes will require vessels of a build calculated to withstand the heaviest sea, as the depth of

water drawn would prevent them from seeking harbours of refuge or, at least, the majority of harbours.

The element of speed will also have to be considered in the build; the surplus harvest of the North-West requiring to be moved during the season of navigation, the greater number of trips that can be made the better the vessel will pay. Such a steamer should average 10 to 12 miles an hour, as fast as the average time of freight trains carrying the same class of freight. While vessels of a model giving greater carrying capacity than assumed previously for the limit of a 12 feet navigation could be constructed, it is safe to conclude that any judgment of the best model of vessel can be formed from what the experience of the American builders have found adapted to navigating the upper lakes. There cannot be employed with safety that peculiarity of marine architecture which the small scale of the former navigation rendered necessary—the old “canaller” upon an enlarged scale.

A propeller built upon the principles indicated could transport, through a 12 feet navigation, some 1,200 to 1,400 tons of cargo; on a 14 feet navigation, some 2,000 to 2,200 tons, and on a 15 feet navigation, 2,400 to 2,600 tons. I have given previously an approximate estimate of the greater profits, relative to expenses, which large carrying capacity affords.

When the surplus cereals of the North-West are brought to Port Arthur, as at present, the grain of Dakota and Montana is taken to Duluth. If there is the same facility of shipping Canadian grain for export from Buffalo east by rail and canal as there now is for exporting American grain by the St. Lawrence route, and if the large vessel has succeeded in directing to Buffalo and prevented from taking the St. Lawrence route the products of the Western States, the same cause will operate in favor of Buffalo receiving and shipping the cereals of our North-West as they now do the shipments from Duluth.

There is a limit to the depth of lake navigation, for the Lake Superior trade, that has been settled, by the Sault Ste. Marie Canal and the deepening of the St. Mary's River by the United States Government, at 16 feet.

The Michigan ports and Lake Erie trade are limited by the Lime Kiln Crossing. The excavation has been made in a bed of limestone rock. It is said to be at present difficult, without a high stage of water, to obtain over 15 feet navigation. Buffalo talks of 20 feet. Make your canals 14 or 16 feet; we will deepen our harbours and the Federal Government will deepen the channels alluded to, and by the larger class of vessels we will still retain our trade as the great receiving port for cereals shipped at western lake ports. It appears that if 16 feet can be obtained it will be as deep as the Federal Government will undertake, considering they have settled in the construction of the lock at Sault Ste Marie and the improvements to the St. Mary's River to that depth. It may be concluded that 16 feet depth of water is a finality, and consequently the ultimate size of vessels as the dimensions of a vessel are governed by the depth of water available, that is, the breadth of beam, depth of hold and length must have relative proportions.

During the season of navigation, 1883, there were 96 propellers (not trips) of registered tonnage, varying from 818 tons register (1,200 tons carrying capacity) to 2,164 tons register, and 3,000 tons carrying capacity, with a draught of water from 13 feet to 15 feet 6 inches, also a large fleet of sailing vessels plying between western ports and Buffalo. Of this large tonnage not one could pass through a 12 feet navigation loaded. Practically, at the present time, every inch of water from 12 feet to 15 feet 6 inches, is a serious discrimination against the St. Lawrence route in favor of Buffalo.

The importance of obtaining the greatest depth of water is manifest, when it is stated that vessels of full capacity of lock, as to length and breadth of beam, when loaded down to 12 feet, every additional inch of water afforded will permit the transport through the canal of 20 to 25 tons additional cargo. If it is deemed advisable to afford a greater depth of water in the canal, the greatest depth possible should be given.

The level of the inland lakes rises and falls gradually from high to low water; from one high or low water year to the succeeding high or low water year, occupies a period of a number of years, which varies from causes it is unnecessary here to notice. In early days there was supposed to be a uniformity in this periodicity. This change in levels, which may be termed normal, affects all the lakes simultaneously. The abnormal changes are caused by prevailing winds for a length of time in one direction, or by heavy gales. To these, Lake Erie, from the shallowness of the water, is subject to the greatest fluctuations. Provision has been made at Port Colborne to prevent the canal from being influenced by these changes. We have, therefore, only to consider the normal levels.

Port Colborne harbour has been excavated to give 17 feet of water in the outer part and 16 feet near the guard lock. There is, consequently, in Port Colborne harbour, the standard depth of St. Mary's Canal and River, also of the Lime Kiln crossing which is subject to the same fluctuations from wind as Port Colborne harbour. Steamers and vessels will therefore be able to enter Port Colborne harbour drawing water of a depth equal to the standard depth settled by the Federal Government of the United States. Steamers engaged in the Lake Superior trade, between Montreal and Port Arthur, will certainly load down to the depth of standard lake navigation, and lighten at Port Colborne to pass the Welland Canal. The structures upon the Lake Erie level of the canal have been designed for a 14 feet navigation at the normal low-water level. Only one season of navigation out of thirty-four, of which a record of the daily depth of water has been recorded, has the level been at or below low-water level for any considerable part of the season. There will, therefore, be in the Lake Erie level of the canal some 17 miles in length—a navigation, of say, from 14 to 16 feet. If at any time a vessel drawing over 14 feet can pass through 17 miles of canal, there is no reason that provision should not be made for her to pass the other 9 miles. Therefore, in my opinion, if the enlargement is undertaken the bank and locks below the Lake Erie level should be so adapted as to allow the

passage of a vessel drawing the navigable depth of this level according to the stage of water.

From a cursory observation of the water registers, I should judge that, taking a long period, there would be as many days of navigation when the water was over 15 feet as under. It would be a judicious expenditure to provide for elevating the water in the lower levels to a mean between the normal high and low-water levels of Lake Erie.

MOVEMENT OF SURPLUS PRODUCTS FROM THE WEST BY RAIL AND WATER.

Wheat and corn are the chief cereals shipped from western lake ports and exported by the St. Lawrence water route. As great prominence has been given to this trade recently, by the agitation for the abolition of canal tolls, and the diminishing quantity of grain taking this route to the sea-board, attention will be confined to these products.

For the surplus cereals of the Western States, there are seven primary speculative markets. Of the total eastern and southern movement, in 1880, Joseph Nimmo, Esq., Chief of the Bureau of Statistics, Washington, states that 80 per cent. was marketed at these points, and that 20 per cent. was shipped direct by rail from the Western and North-Western States. The direct shipments from points of production are difficult to estimate. Whether this could be applied as an average, I am not aware.

The following are the markets and the receipts of wheat and corn for the year 1883:—

Principal Grain Markets.	Wheat.	Corn.
	Bushels.	Bushels.
St. Louis.....	15,000,704	20,001,405
Peoria.....	340,880	9,363,225
Chicago.....	20,364,155	74,412,319
Milwaukee.....	9,025,164	2,256,862
Duluth.....	6,700,000	195,000
Detroit.....	6,857,366	1,823,087
Toledo.....	23,818,000	10,506,600
Total.....	82,106,269	118,558,543

Of the quantity marketed, some 81 per cent. of wheat and 75 per cent. of corn was at lake ports, naturally contributory to Montreal. A greater quantity of wheat is marketed at lake ports, the principal producing districts being tributary and contiguous to the lakes. The corn-producing country being to the southward of the lakes, numerous competing railways intersecting it, particularly Southern Illinois, a larger percentage is shipped directly by rail from the point of production to the consumer.

At lake ports the largest receipts of wheat are in July and August. The harvest if necessary, can be marketed and shipped east before the closing of navigation.

In Dakota and western Minnesota the harvest is later, A larger portion arrives at lake ports after the closing of navigation and awaits its opening in the warehouses of Duluth or Milwaukee. Corn is ready for market in December. Receipts are largest at lake ports in December and the three following months.

An analysis of the receipts and shipments at Chicago, shows that the principal business is done during the season of navigation, that the wheat crop may reach the seaboard before the closing of navigation, and that the corn awaits the reduction of cost of transportation by the waterways.

The following figures are given corroborative of the preceding statement, of receipts of wheat and corn at Chicago, 1883:—

	Bushels.
Receipts, season of navigation.....	67,318,275
“ winter months.....	27,458,196
Total receipts.....	94,776,471

Receipts during season of navigation, 71 per cent., and during the winter 29, per cent.

Of the shipments of wheat and corn, the following statement will show the proportion shipped by rail and by water for the last twenty years:—

Statement of Shipments of Wheat and Corn, East from Chicago.

Year.	Wheat.		Corn.	
	By Lake.	By Rail.	By Lake.	By Rail.
1864.....	9,983,567	173,392	11,993,475	193,217
1865.....	6,502,575	866,028	24,421,600	902,369
1866.....	5,827,846	4,055,303	31,257,855	1,369,771
1867.....	8,492,187	1,899,277	19,940,172	1,285,428
1868.....	8,896,647	1,402,816	21,671,071	2,978,388
1869.....	11,219,514	1,895,823	17,019,940	4,501,481
1870.....	13,429,069	2,902,953	13,598,387	4,108,942
1871.....	12,120,923	686,573	34,200,876	2,515,154
1872.....	8,831,870	3,122,166	41,589,508	5,424,044
1873.....	15,528,984	8,149,209	34,487,205	2,194,361
Ten years	100,893,182	25,153,540	250,180,089	25,473,155
1874.....	16,974,149	9,729,251	30,242,311	2,364,833
1875.....	16,061,054	5,956,619	21,850,662	4,321,559
1876.....	7,396,369	5,378,792	28,104,465	17,299,232
1877.....	10,345,983	2,957,250	38,607,611	7,667,511
1878.....	12,903,481	10,018,880	46,368,653	13,504,458
1879.....	17,622,796	12,232,323	41,561,336	19,711,615
1880.....	16,685,046	4,728,425	72,400,789	21,100,849
1881.....	7,688,072	7,680,269	44,164,571	29,623,326
1882.....	14,944,258	2,389,645	31,394,261	16,911,850
1883.....	7,067,657	2,590,866	47,738,117	22,579,633
Ten years	127,688,865	63,662,260	402,432,546	155,074,866

It will appear, for the decade ending 1873, that 87·4 per cent. of wheat and corn was shipped by water, and 12·6 per cent. by rail. For the decade ending 1883, some 70·8 per cent. was shipped by lake and 29·2 per cent. by rail. That the railways have increased their percentages during the last decade is due to the decreased cost of transportation through the steel rail and other improvements, and particularly on account of two years of railway wars, during which grain was carried below cost—1876 and 1881. In these years, taken together, the railways increased their shipments to some 41 per cent., leaving 59 per cent. by water.

The shipments of wheat and corn during the season of navigation 1883, were:—

	Bushels.
Shipped by rail.....	13,534,155
“ lake	54,805,774
Total	68,339,929

There was shipped by rail, say, 20 per cent., and by water 80 per cent.

The competition of rail with water transport or all rail shipments was commenced about 1869. The competition became more severe as additional through lines were established, of which there are eight running east from Chicago. The following table, taken from the Report of the Chicago Board of Trade, gives the destination of shipments of wheat and corn by lake from Chicago in 1883:—

Statement showing destination of Shipment of Wheat and Corn by Lake from Chicago, 1883.

	Bushels.
Lake to Buffalo	37,312,808
“ to other U. S. ports.....	5,237,085
Lake to Canadian ports in transit to U. S. ports, viz.:	
“ to Midland.....	1,480,906
“ to Collingwood.....	1,324,875
“ to Port Edward.....	1,371,786
“ to Sarnia.....	1,077,681
	5,255,248
“ to Oswego and Ogdensburg.....	2,275,549
“ to Kingston and Montreal.....	3,437,104
“ to other Canadian ports ...	1,287,980
Total.....	54,805,774

Some 68·1 per cent. was shipped to Buffalo, 6·3 per cent. to Kingston and Montreal, while 9·6 per cent. was shipped to Canadian ports, on Lake Huron and Georgian Bay, and transported by rail to the Eastern States.

The latter shipments to the Grand Trunk, Midland and Northern Railways, amounting to 5,255,248 bushels, and taking 3,803,667 bushels shipped all rail from Chicago by the Grand Trunk, there is a total of 9,058,915 bushels of wheat and corn. The proportion of this which passed through Montreal cannot be determined. 2,422,330 bushels were received at Montreal by the Grand Trunk Railway, a considerable

portion of which must have been Canadian, while 8,453,833 bushels were received by the Lachine Canal, which quantity is, perhaps, less than that shipped through Montreal to New England points by rail.

Toledo being nearer the seaboard, a larger percentage is shipped by rail than from Chicago.

Statement showing the destination of Shipments of Wheat and Corn by Lake, from Toledo, in 1883.

	Bushels of Wheat and Corn.
Lake to Buffalo.....	9,016,433
" to Montreal.....	1,265,296
" to Oswego and Ogdensburg.....	1,062,540
" to other ports.....	797,798
Total.....	12,142,067

These statements concerning the two principal ports which utilize the Welland Canal, give some idea of the business which Montreal is allowing to seek other routes.

As reference has lately been made to the large amount of grain in store at Chicago, and the small quantity seeking the St. Lawrence route, caused, it is asserted, by canal tolls, this trade will be analyzed.

The shipments of wheat and corn from Chicago, taken as an initial point, may be divided into three classes.

Shipments to the consumer, direct to interior points, say, east of the Welland Canal.

Direct shipments to Great Britain upon a through bill of lading and through freight rates.

Shipments to Atlantic ports, either for export or home consumption, as deemed advisable.

The first shipments to the consumer are either by all-rail, lake to Buffalo and rail therefrom, or lake to Oswego and Ogdensburg, principally, on Lake Ontario, and rail therefrom. This business has been almost entirely diverted from the Erie Canal. On account of the small scale of navigation upon the Welland Canal, it has been diverted from Oswego and other American ports below the canal. Through the enlargement, these towns hope to regain this trade and increase it. If the canal is deepened there is no doubt but that there will be a diversion from Buffalo, and a corresponding increase to the revenue of the Welland Canal. The abolition of tolls on the Erie Canal, or tolls on our own canals, cannot effect Montreal in so far as this business is concerned, for under the present system of commercial relations between the two countries, it is impossible for Montreal to engage in it.

The following statement shows the remarkable decline in the five years ending 1883, from the five years ending 1878, in the percentage of wheat and corn passing through the Welland Canal from United States to United States ports. It might be a subject of congratulation, if there had been a proportionate increase in the movement down the St. Lawrence of export grain, but such has not been the case; the decline

has been caused by the diversion to Buffalo of wheat and corn for the domestic consumption of the Eastern States, caused by the large vessel. From the increase in 1883 it may be hoped, that if the Welland Canal is deepened, the south shore of Lake Ontario and the River St. Lawrence will regain its former proportion of shipments through the Welland Canal. For the first five years, the percentage to United States ports was some 49 per cent.; for the second, 25 per cent.

Statement showing the Quantity of Wheat and Corn passed down the Welland and St. Lawrence Canals, from Lake Erie to Montreal; also, the Quantity passed down the Welland Canal from United States to United States Ports, Amount of Tolls thereon and showing Percentage of Increase and Decrease, from 1874 to 1883, inclusively.

Years.	Lake Erie to Montreal.		United States to United States.	
	Tons.	Tolls.	Tons.	Tolls.
1874.....	209,154	\$ 41,830	354,647	\$ 72,929
1875.....	162,579	32,316	168,020	33,604
1876.....	163,899	32,779	154,384	30,876
1877.....	234,420	46,884	172,645	34,529
1878.....	232,316	46,463	125,568	25,114
Total.....	1,002,368	200,272	977,264	197,052
1879.....	303,709	60,678	87,192	17,438
1880.....	332,652	66,529	46,733	9,347
1881.....	146,137	29,225	64,361	12,870
1882.....	179,166	36,833	62,680	12,534
1883.....	185,570	37,114	120,410	24,082
Total.....	1,147,234	229,379	381,346	76,269

The second, through shipment to Great Britain, is a purely rail business, not taking the all-water routes. The advantages are, a through bill of lading is given, with through freight rates, embracing intermediary charges, commission, &c. The through freight rate to Liverpool is quoted lower than the combined rail and ocean freight. Rates can be cut as the pro-rating of the through rate between the railway and the ocean vessel companies, is not known.

The regular ocean steamer lines have their agents in Chicago seeking business. Shipments are sometimes made of wheat and corn for ballast for the steamer. Montreal, through the Grand Trunk, is able to obtain her share of this business, which cannot be affected by canal tolls.

By the following statement is shown the extent and growth of this trade, a diversion from the canals through the saving of intermediary charges, and the competition of rival Atlantic ports, steamship lines and railways.

The Secretary of the Chicago Board of Trade states that local shippers usually prefer to consign to eastern cities, with the option of sale there, or ultimately shipping to Europe.

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Statement of Direct Exportation of Wheat and Corn on through Bills of Lading from Chicago.

Years.	Wheat.	Corn.	Total.
1869	5,220		5,220
1870	84,519		84,519
1871	131,908		131,908
1872	269,617	388,907	657,524
1873	1,409,948	8,600	1,418,548
1874	980,193	209,647	1,189,840
1875	2,440,713	708,979	3,149,692
1876	1,199,718	2,316,206	3,515,924
1877	1,954,687	1,620,575	3,575,262
1878	6,121,681	4,149,552	10,271,233
1879	3,527,807	10,991,760	14,519,567
1880	2,267,220	7,439,068	9,696,288
1881	3,237,319	7,638,335	10,875,654
1882	1,528,076	1,089,478	2,617,554
1883	2,124,441	2,893,870	5,018,311

In 1883, of the total shipments on through bill of lading to Europe, of grain seeds, meats and other products, 134,394 tons were shipped by lake to Buffalo, and rail to the seaboard, and 320,873 tons all-rail.

The third, through shipments to Atlantic ports, either for export or home consumption. For shipments all-rail, Montreal is at no disadvantage, except the inadequate terminal facilities, with other competing ports. She is of a great through line, and, in the near future, of another, the nearest ocean port for at least seven months of the year. As there is no home market in Montreal, we have now its grain business reduced down to export grain shipped by lake, which may take either lake and rail or all water. For lake and rail shipments Montreal has the same opportunities as other ocean ports. There are four ports upon Georgian Bay and Lake Huron to which grain is shipped, as stated elsewhere in detail, and carried through Montreal to American ocean ports.

Taking a year—Montreal had a less percentage of export than usual in comparison with other Atlantic ports—1879. In that year, of wheat and corn—

	Bushels.
Montreal exported.....	14,513,528
Boston do	11,784,448
New York do	98,793,977
Philadelphia do	31,433,667
Baltimore do	53,471,768
Total bushels.....	209,997,388

In the same year the shipments from Buffalo, by canal, of wheat and corn were 51,214,891 bushels; the receipts by canal, at New York, being nearly the same quantity. Allowing that the greater portion of these receipts was exported, I find that during the time the canal was opened there were about 64,000,000 bushels of

wheat and corn exported, which would leave, say, 13,000,000 exported in excess of receipts by canal. As Montreal's harbor is closed about five months in the year, it would be unfair to compare her seven months' exports with the twelve months of other ports. We, therefore, have these approximate figures sufficiently accurate for illustration of the export of those ports during open navigation at Montreal.

	Bushels.
Montreal, say.....	14,000,000
Boston	7,500,000
New York.....	64,000,000
Philadelphia	20,500,000
Baltimore	37,000,000
	143,000,000

The proportion of this quantity shipped from the lake ports cannot be determined. It is evident that Montreal is not weighted by canal tolls on all such grain exported from the following rail ports during the period Montreal harbor is open :

	Bushels.
Boston	7,500,000
New York (excess of canal receipts).....	13,000,000
Philadelphia.....	20,500,000
Baltimore	37,000,000
Total.....	78,000,000

There are, therefore, 78,000,000 bushels which are not effected by canal tolls, and 50,000,000 which were carried by the Erie Canal, the cost of transportation of which was lessened by the abolition of tolls. As the Gods help him who helps himself, it would seem reasonable, before laying such stress upon canal tolls, and crying out for their abolition, that Montreal should exert herself to obtain her proportion of the major quantity exported, unaffected by canal tolls, before asking a bounty or subsidy from the general public to obtain a proportion of the minor quantity, which, it is asserted, free canals will attract down the St. Lawrence.

Competing Routes to the Welland Canal.

The increased competition to the Welland Canal, together with being hitherto weighted by the small scale of navigation, has diverted its traffic; that the decrease is not due alone to the competition of railways, is obvious, from the following statement showing the tons of property moved upon the Welland and Erie Canals during the last twenty years.

*Statement of the tons of property moved upon the Welland and Erie Canals from
1864 to 1883.*

YEAR.	Tons of Property.		YEAR.	Tons of Property.	
	Welland Canal.	Erie Canal.		Welland Canal.	Erie Canal.
1864.....	1,095,649	2,535,792	1874.....	1,503,750	3,097,122
1865.....	868,078	2,623,490	1875.....	1,116,418	2,787,226
1866.....	980,178	2,896,027	1876.....	1,097,198	2,418,422
1867.....	916,252	2,920,578	1877.....	1,100,849	3,254,367
1868.....	1,135,634	3,346,986	1878.....	1,079,200	3,608,634
1869.....	1,194,750	2,845,072	1879.....	907,518	3,820,027
1870.....	1,274,838	3,083,132	1880.....	882,874	4,008,651
1871.....	1,439,060	3,580,922	1881.....	760,478	3,598,721
1872.....	1,263,223	3,562,560	1882.....	608,929	3,694,364
1873.....	1,330,629	3,602,535	1883.....	827,196	3,587,102
Totals.....	11,498,291	30,897,094	Totals	9,864,410	34,474,636
Yearly Average...	1,149,829	3,089,709	Yearly Average ..	986,441	3,447,464

From the foregoing it is apparent that during the last decade there has been an increase in the tons of property moved upon the Erie Canal of some three and one-half million tons, while upon the Welland Canal there has been over one and a-half million tons decrease compared with decade ending 1873.

To the Welland Canal, taking Chicago as an initial point for all rail, there are the following principal competitors for the transportation of products to the East :

All Rail.

Baltimore and Ohio Railroad.

Pan Handle " "

Nickle Plate " "

Michigan Central " "

Fort Wayne and Pittsburgh Railroad.

Chicago and Atlantic.

Lake Shore and Michigan Southern.

Chicago Grand Trunk.

These roads are controlled by the following Eastern roads :

Baltimore and Ohio Railroad, to Baltimore, Philadelphia and New York.

Pennsylvania Railroad, to Philadelphia, New York and Baltimore.

New York, Lake Erie and Western (Erie Railroad), to New York and Boston.

New York Central, to New York ; and Boston and Albany Railroad, to Boston .

Grand Trunk, to Montreal, Portland, Boston, and *via* International Bridge, to connecting railways to the seaboard, with termini at Buffalo

Lake and Rail.

To Buffalo by lake, and railways therefrom : New York Central R.R. ; Erie R.R. ; Buffalo, New York and Philadelphia R.R. ; Delaware and Lackawanna R.R. ; New York, West Shore and Buffalo R.R., and Lohigh Valley Railway.

To Midland by lake and Midland R.R. and Grand Trunk R.R. eastward, or by barges from Belleville to Montreal.

To Collingwood by lake, and Northern and North-Western Railway to Hamilton, Toronto, and eastward by lake and rail.

To Point Edward and to Sarnia by lake, and Grand Trunk Railway eastward.

Lake and Canal.

To Buffalo by lake, and Erie Canal eastward.

Freight rates on routes competing with the Welland Canal.

The following statement, of the average yearly freight rates upon a bushel of wheat to New York, by these three methods of shipment from Chicago, all rail or *vid* Buffalo, lake and rail and lake and canal, shows the great decrease in cost of transportation in the annual average of the last ten years over the previous ten years.

Average rate of freight upon a bushel of wheat from Chicago to New York, from 1864 to 1883, by Lake and Erie Canal; by Lake and Rail from Buffalo; by All Rail, and average for two decades.

YEAR.	Lake and Canal.	Lake and Rail.	All-Rail.	YEAR.	Lake and Canal.	Lake and Rail.	All-Rail.
	cts.	cts.	cts.		cts.	cts.	cts.
1864.....	28.36	.....	52.20	1871.....	14.14	17.00	27.00
1865.....	26.62	.....	50.68	1875.....	11.43	14.60	23.66
1866.....	30.36	.....	45.37	1876.....	9.83	9.88	12.00
1867.....	22.36	.....	42.00	1877.....	10.96	13.29	19.80
1868.....	22.79	29.00	37.50	1878.....	9.16	10.17	15.36
1869.....	23.12	25.60	33.15	1879.....	11.68	12.54	16.60
1870.....	17.10	22.60	30.37	1880.....	12.22	14.64	19.80
1871.....	20.24	25.25	30.75	1881.....	8.28	10.86	12.40
1872.....	24.25	28.70	31.12	1882.....	7.94	11.57	15.00
1873.....	20.19	27.00	29.90	1883.....	8.30	12.10	16.60
Av'ge for decade	23.54	26.32	38.29	Av'ge for decade	10.39	12.66	17.80

The following statement gives the average monthly freight rates from Chicago to New York, from 1869, the date when railways commenced carrying grain all-rail from Chicago. To the lake and canal rates must be added the intermediary charges at Buffalo and the lake insurance on the property, both of which is saved by shipping all-rail. The through rate, lake and rail, covers intermediary charges at Buffalo.

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Average monthly freight charges per bushel on wheat from Chicago to New York by water (lakes, Erie Canal, and Hudson River), by lake and rail (lake to Buffalo and thence rail to New York), and by all-rail, 1869 to 1883.

MONTH.	YEAR.														
	1869.			1870.			1871.			1872.			1873.		
	All Wa- ter.	Lake & Rail.	All Rail.	All Wa- ter.	Lake & Rail.	All Rail.	All Wa- ter.	Lake & Rail.	All Rail.	All Wa- ter.	Lake & Rail.	All Rail.	All Wa- ter.	Lake & Rail.	All Rail.
	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
January.....	.....	.....	42	.....	.....	42	.....	.....	39	.....	.....	39	.....	.....	39
February.....	.....	.....	39	.....	.....	42	.....	.....	39	.....	.....	39	.....	.....	39
March.....	.....	.....	30	.....	.....	36	.....	.....	30	.....	.....	36	.....	.....	39
April.....	.....	26	30	.....	22	30	.....	22	27	.....	.....	30	.....	.....	36
May.....	19	25	30	16	20	27	16	21	27	18	25	27	19	25	31
June.....	21	25	27	16	21	27	16	21	24	21	23	27	18	22	27
July.....	18	23	27	15	20	27	16	22	27	23	23	27	17	22	27
August.....	19	20	30	15	20	27	18	21	30	22	23	27	17	21	27
September.....	22	22	39	15	23	30	23	25	33	27	32	33	25	30	31
October.....	29	27	39	21	25	36	27	32	39	31	37	39	21	28	33
November.....	32	36	42	20	29	39	25	32	39	28	38	39	20	26	36
December.....	.....	.....	42	.....	.....	39	.....	.....	39	.....	.....	39	.....	.....	.....

	1874.			1875.			1876.			1877.			1878.		
January.....	.....	.....	36	.....	.....	24	.....	.....	27	.....	.....	21	.....	.....	24
February.....	.....	.....	33	.....	.....	24	.....	.....	27	.....	.....	21	.....	.....	24
March.....	.....	.....	33	.....	.....	24	.....	.....	24	.....	.....	21	.....	.....	20.1
April.....	.....	.....	27	.....	.....	24	.....	.....	22	.....	.....	18.2	9.3	11.8	15
May.....	16	20	27	13	14	24	10	11	12	5.8	14.4	18	8.9	10.5	13.6
June.....	15	18	27	10	12	24	9	11	12	5	14	18	7.7	9.3	12
July.....	13	17	27	10	12	24	8	11	12	5.5	13.6	18	6.8	8.4	12
August.....	11	16	27	11	12	24	8	10	12	7.2	14.1	18	9.6	9.4	15.8
September.....	12	17	27	9	12	24	9	11	12	7.7	15.6	20.6	13.5	13.4	18
October.....	13	16	27	11	14	23	12	13	12	10.9	17.9	22.4	13	14.4	18
November.....	13	17	27	13	20	24	13	15	12	10.2	18.2	24	12.4	14	18.5
December.....	.....	.....	27	.....	19	28	.....	.....	14.4	.....	18.7	24	.....	.....	21

	1879.			1880.			1881.			1882.			1883.		
January.....	.....	.....	21	.....	.....	24	.....	.....	21	.....	.....	12	.....	.....	18
February.....	.....	.....	21	.....	.....	24	.....	.....	21	.....	.....	12	.....	.....	18
March.....	.....	.....	19	.....	.....	31	.....	.....	21	.....	.....	13.5	.....	.....	18
April.....	.....	.....	12	12.4	17.5	19.3	.....	.....	17.3	9	12.1	15	.....	11.9	16.7
May.....	8.1	11.9	12	11.8	16.3	18	11.6	15	18	8.1	11.3	15	8.3	11.5	15
June.....	7.4	10.6	10.6	14.6	16.5	18	9.4	12.3	13.4	7.8	10.9	15	7.4	10.9	15
July.....	9.1	9.7	12	11.8	15	18	7.7	9.4	10.5	7.3	10.1	15	7.2	10.7	15
August.....	12.5	11.5	15.2	12.3	14.8	18	7.3	8.6	10.5	8.5	10.6	15	9.1	11.9	15
September.....	15	13.7	18	11.3	13.7	18	8.7	9.2	10.4	8.8	10.6	15	11.3	12.9	15
October.....	18.6	16.4	19.7	14.6	15.2	18	8.3	9.1	8.7	10.4	11	15	10.2	11.7	15
November.....	20.5	19.4	23	16.5	16.7	18.9	8.5	9.9	12	10.2	11.4	15	9.7	11.8	15.5
December.....	.....	.....	24	.....	.....	21	.....	.....	10.3	.....	10.9	18	.....	.....	18

Competition of Railways with Erie Canal.

As the effect upon the traffic of artificial waterways from the competition of railways is now prominently discussed, statistics of the comparative movement upon the New York State canals and the railroads which are more directly competing are

cited, from which it is affirmed that the great increase in tons of property moved upon the latter prove that all waterways will be supplanted by railways. If we take the following comparative statement, we find there has been in the last decade, in which there has been a most severe railway competition—two railway wars, when they were carrying below cost—that the Erie Canal has increased its traffic. Because, if on the New York Central the tons of property moved have increased in the last decade to such a large extent, it is not a justifiable inference that the days of the canal are numbered. With some six railways in opposition to the Erie Canal, it is remarkable that a purely artificial waterway of small capacity, restricted water supply, and numerous other disadvantages, has sustained its traffic in the manner it has done. The Railway Commissioners of the State of New York, in their annual report, say they have discovered a practice upon the part of a few railways which, if allowed to become general, threatens to destroy all competition by the water routes. That these railways have made a form of contract for yearly shipments, with 30 to 50 per cent. reduction from the traffic rates, on the express condition that no goods should be shipped by canal during the season of navigation. That a shipper by the canal, who owned canal boats and store houses upon the canal, was obliged to pay a large advance over his competitors in the same business, because he could not contract to ship by railway. Legislation is proposed to prevent these discriminations, which are also operative on our own canals.

Statement showing the movement of property upon the Erie Canal and New York Central Railway, with average freight charges per ton-mile.

YEAR.	Erie Canal. — Tons.	N. Y. Central Railway — Tons.	FREIGHT.	
			Average per ton-mile. — Canals.	Average per ton-mile. — Railways.
1864.....	2,535,792	1,657,148	Ots.	Ots.
1865.....	2,523,490	1,275,299	1.15	2.75
1866.....	2,896,027	1,602,197	1.10	3.31
1867.....	2,920,578	1,667,926	1.00	2.92
1868.....	3,346,986	1,846,599	.90	2.53
1869.....	2,845,072	2,281,885	.88	2.59
1870.....	3,083,132	4,122,000	.92	2.20
1871.....	3,580,922	4,532,056	.83	1.86
1872.....	3,562,560	4,393,965	1.02	1.65
1873.....	3,602,635	5,522,724	1.02	1.69
1874.....	3,602,635	5,522,724	.88	1.57
Average for decade.....	3,089,709	2,880,180	.97	2.31
1874.....	3,097,122	6,114,678	.73	1.47
1875.....	2,787,226	6,001,954	.66	1.27
1876.....	2,418,422	6,803,680	.68	1.05
1877.....	3,254,367	6,351,366	.57	1.02
1878.....	3,608,634	7,695,413	.42	.91
1879.....	3,820,027	9,015,753	.46	.80
1880.....	4,608,651	10,533,038	.49	.88
1881.....	3,598,721	11,591,379	.38	.77
1882.....	3,694,364	11,330,393	.42	.74
1883.....	3,587,102	10,892,440	Not given.	.91
Average for decade.....	3,447,464	8,630,008	.53	.98

The foregoing shows the decrease in the cost of transportation, both by water and by rail. It is reasonable to suppose that the increase in tonnage by the railways is not owing to the failure of waterways in economy of transport, but rather, as the country becomes more populated and wealthy, that those articles which can bear the increased cost of transportation by rail, augment in quantity, that those products which can be handled more expeditiously, and at less expense, when time, terminal facilities, and other reasons are taken in consideration, have gravitated to railways. Besides, the canal cannot increase its business, except to the towns along its line or direct trade between its terminal points. Whatever conclusions may be drawn from statistics with regard to the Erie Canal and competing railways, these are in no manner applicable to the Welland Canal, connecting large bodies of water, above which floats a magnificent marine, which is constantly being augmented, notwithstanding it is stated that railways have supplanted the waterways.

In the shipments of wheat and corn received by lake from the elevators at Buffalo, the competition of railways to the canal is shown in the following table :

Shipments of wheat and corn, received by Lake at Buffalo, by Erie Canal, and by Rail from elevators.

YEAR.	By Canal.	By Rail.	Total.
	Bush.	Bush.	Bush.
1872.....	41,935,675	5,472,710	47,408,385
1873.....	46,337,141	8,465,006	54,792,147
1874.....	38,090,889	9,867,382	47,958,271
1875.....	32,927,260	12,632,110	45,559,370
1876.....	25,297,381	12,566,651	37,864,032
1877.....	38,618,627	13,177,382	51,796,009
Total, 6 years.....	223,206,973	62,171,241	285,378,214
Yearly average.....	37,201,162	10,361,873	47,563,035
1878.....	51,502,264	18,474,089	69,976,353
1879.....	51,214,891	15,944,136	67,159,027
1880.....	70,287,134	29,319,376	99,606,510
1881.....	29,211,688	20,128,767	49,340,455
1882.....	28,124,811	12,200,851	40,325,664
1883.....	36,296,276	15,296,529	51,592,805
Total, 6 years.....	268,637,064	111,383,748	378,000,814
Yearly average.....	44,439,510	18,560,624	63,000,135

From the foregoing, it appears, for the six years ending 1877, the percentage shipped by canal was 78.3 and by rail 21.7; for the six years ending 1883, by canal 70.20 per cent., and by rail 29.80. Showing that during the last six years the rail shipments have increased.

By comparing these figures with those given previously, of lake and rail shipments from Chicago, the canal from Buffalo has carried as large a percentage as shipped by water from the former port.

To compete against lake and canal *vid* Buffalo, the railway companies have found it necessary to transport by water from western ports to Buffalo. They have their own elevators, and either own or control propeller lines which run, in connection with the railway, between lake ports and Buffalo. The New York Central Railway has twelve propellers, which can, in the aggregate, transport 29,205 tons of cargo. The Erie Railroad has a fleet of fifteen steamers and two schooners, with an aggregate carrying capacity of 24,225 tons. The Lehigh Valley Railroad has a line of six propellers of 10,000 tons carrying capacity, running in connection with it. The Pennsylvania Railroad owns the Anchor Line of steamers, numbering seventeen, also two schooners, with an aggregate carrying capacity of some 20,000 tons.

We thus have some fifty-four steamers, and schooners of an aggregate carrying capacity of 93,430 tons, owned or controlled by railway companies and run in connection with their lines.

TRANSPORTATION OF GRAIN (ALL WATER) TO THE SEABOARD.

Grain afloat upon the upper lakes may be forwarded in the following manners:—

To Buffalo, in large propellers, in propellers towing one or more consorts, in large sailing vessels, the greater portion of this tonnage would be unable to pass through the Welland Canal with the present depth of navigation.

To Oswego, Ogdensburg and other American ports on the south shore of Lake Ontario and the St. Lawrence, in small vessels chiefly, or larger ones requiring to be lightened at the Welland Canal.

To Kingston by a similar class of vessel as to Oswego. This business is done in American bottoms, there being no return freight for Canadian vessels. The American vessel, after discharging her cargo at Kingston, goes to Oswego or Charlotte, and obtains a return cargo of coal at as high rates as the down freights.

To Montreal in small propellers of the capacity of the St. Lawrence canals, lighting a part of their cargo at Kingston. It is said one of these vessels was lately chartered to carry corn from Chicago to Montreal for 5 cents per bushel. While the large propeller of the upper lakes might pay at this rate, if enabled to reach Montreal, it would appear impossible for the small ones to pay running expenses. In a petition in 1880 to the late Governor General by merchants, ship owners and others, for the alleviation of canal tolls, taxes, dues, &c., the cost of moving a bushel of grain from Chicago to Montreal is stated to be about 10 cents, in small propellers. Since the enlargement of the Welland Canal, Canadian propellers have been enlarged, and several built adapted to the present length of the St. Lawrence locks, but ultimately intended to be lengthened when the enlargement of the St. Lawrence canals is completed. A propeller of this class now navigating the canals has a carrying capacity of 40,000 bushels of wheat, drawing 14 feet of water, required to lighten up 2 feet to pass the Welland Canal, and if descending the St. Lawrence to lighten again at Kingston.

The advantages possessed by Buffalo to prevent her trade from reaching Lake Ontario or the river St. Lawrence, are numerous. There is the large vessel, which is able to ply between it and western ports, which, descending to Lake Ontario, is sub-

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jected to detention and heavy charges for lightening. This phase of the transportation question has been previously fully treated. Another important advantage is the facility for discharging and loading vessels with quickness and dispatch. There are thirty-eight elevators, comprising storage, transfer and floating elevators, with a combined storage capacity of 9,000,000 bushels, and a daily transfer capacity of 3,000,000 bushels. The total cost of this property was some \$7,500,000. The principal return cargoes are coal. Five railways, terminating at Buffalo for lake shipments, run into the anthracite coal region, and three into the bituminous.

These roads have provided adequate terminal facilities. They have constructed numerous canals and docks, admitting vessels of 16 feet draught of water, also 5 pocket-trestles, with 224 pockets, holding 20,700 tons, and a capacity for delivering into vessels over 1,500,000 tons of coal during the season. These facilities are being increased; it is stated that the improvements contemplated will enable, in a few years, 5,000,000 tons being shipped annually.

To practically illustrate the celerity in discharging and loading vessels, I find, by referring to the shipping columns of a Buffalo commercial paper, that a propeller towing three consorts, with combined cargoes of 265,000 bushels of corn, entered port on 6th June, and cleared on the 8th June with 7,300 tons of coal. That at the Lackawana shutes, the propeller "D. C. Whitney" was loaded with 1,800 tons of coal in two and one-half hours.

Vessels at Buffalo are always assured of a return cargo. The following statement shows the shipments westward, by lake from Buffalo, of heavy articles, during the last five years.

	1879.	1880.	1881.	1882.	1883.
Coal..... Tons.	580,646	589,670	825,240	1,011,098	1,248,778
Cement..... Brls.	103,858	144,125	170,410	170,985	227,604
Railroad iron..... Tons	525	35,941	44,462	12,345	64,903
Salt..... do	26,372	17,725	11,955	12,342	11,524
Salt..... Brls.	222,778	225,982	109,810	106,687	109,258

Three of the principal inducements for lake vessels to prefer freight to Buffalo rather than Lake Ontario ports have been enumerated; but there are many other reasons, apart from the question of transportation—questions of trade and commerce, political relations—which might be cited. The wealth, enterprise and determination of New York City not to let the trade of the West slip from her grasp, the railway companies, which have expended so much capital in Buffalo in real estate and terminal facilities (the real estate owned by railway companies is valued by the city assessors at \$15,000,000) will make every effort to retain the trade; they own their own steamship lines, and the West must be supplied with coal. It may, therefore, be said that every ton of coal shipped westward returns a ton of grain to Buffalo.

These remarks with reference to Buffalo are made, because, notwithstanding the enlargement of the Welland Canal, it still remains the foot of lake navigation for

large vessels, which it is necessary to extend first to Kingston, by deepening the Welland Canal, and afterwards to Montreal, by the completion of the enlarged St. Lawrence canals, or there will be little prospect of diverting trade from Buffalo, which has so many advantages in its favor without this additional tax on large vessels sailing down to Lake Ontario.

The following statement shows that the lake commerce and tonnage entering and clearing from the district of Buffalo Creek is much greater than the sea-going vessels of the Harbor of Montreal. That, during the last ten years, the annual average number and aggregate tonnage of lake vessels arriving and departing from Buffalo Creek were, in number, 7,438, and aggregate tonnage 4,165,098 tons, and the average size craft 560 tons; that the average number of sea-going vessels arriving and departing for Montreal was 1,241, and the aggregate tonnage 972,195, which would give an average tonnage to each vessel of, say, 784 tons:

Statement of the Number of Lake Vessels, and Aggregate Tonnage entered and cleared at Buffalo, and the Number and Aggregate Tonnage of Sea-going Vessels entered and cleared at Montreal, from 1874 to 1883.

Year.	Buffalo.		Montreal.	
	Number of Vessels.	Tonnage.	Number of Vessels.	Tonnage.
1874.....	7,447	3,641,019	1,462	846,846
1875.....	6,278	3,259,839	1,284	772,224
1876.....	4,624	2,767,986	1,204	782,360
1877.....	6,785	3,539,219	1,026	753,718
1878.....	8,743	4,668,688	1,032	794,532
1879.....	8,447	4,442,717	1,224	1,013,938
1880.....	10,308	5,995,747	1,420	1,256,542
1881.....	6,745	4,535,223	1,138	1,063,858
1882.....	7,333	4,405,003	1,296	1,109,384
1883.....	7,677	4,405,513	1,320	1,328,526
Total.....	74,387	41,650,984	12,406	9,721,928
Annual average.....	7,438	4,165,098	1,241	972,193

The column of the foregoing table giving the arrivals and departure of sea-going vessels is taken from the report of the Montreal Board of Trade, in which the arrivals are noted; as few sea-going vessels winter at Montreal, the arrivals are doubled for the purpose of comparison.

I find, taking an annual average of the same five years, there were 6,010 vessels and barges, with an aggregate tonnage of 884,645 tons, of inland craft arrived at Montreal. During the same period there were 9,172 canal boats cleared from Buffalo; they might be assumed to average 100 tons register each, which would give 917,200 tons.

Take the following statement, to still further illustrate the magnitude of the commerce of Buffalo, and what we might hope to approach in the future, when the

enlarged system of navigation is completed, and Montreal the foot of inland navigation; when the north shores of Lakes Huron and Superior are developed; when the North-West is populated and shipping its surplus products eastward by this magnificent waterway, and when there is free commercial intercourse with the United States.

Statement of Number of Vessels and Aggregate Tonnage in the Foreign Trade, entered and cleared in the year ending 30th June, 1882, from the Reports of Commerce and Navigation, United States and Canada, at five Atlantic Ports, and total number and tonnage of Foreign and Coast-wise at Buffalo during the season of Navigation, 1882.

Ports.	Number.	Aggregate Tonnage.	Average Tonnage.
Montreal.....	663	815,756	1,230
Baltimore.....	1,771	1,655,202	935
Philadelphia.....	2,469	2,025,124	822
Boston.....	5,968	2,721,400	473
Buffalo.....	7,333	4,405,003	614
New York.....	12,705	14,624,017	1,151

The foregoing table shows that the shipping of Buffalo is greater than the foreign commerce of any of the Atlantic ports except New York.

FREIGHT RATES AND COST OF TRANSPORT (ALL WATER).

At present economic transportation is, by the rival water routes, by lake vessels, canal boat and barge. Small propellers running direct from western ports to Montreal it is not necessary to consider.

To avoid confusion one product will be taken—wheat.

The following statement is given to illustrate the advantages or disadvantages of the St. Lawrence route for a number of years, through the actual freight charges. It embraces two decades, ending respectively in 1873 and 1883. The second decade may be termed the era of reduced cost of transport, both by rail and lake vessel. It is during this series of years that exports of wheat and corn have been decreasing from Montreal in comparison with other Atlantic ports.

Statement of Freight and Tolls upon a Bushel of Wheat from Chicago to Buffalo (Lake and Erie Canal), and from Chicago to Montreal (Lake to Kingston, River and Canals).

Years.	Chicago to New York.					Chicago to Montreal.				
	Lake.	Canals.	Lake and Canals.	Toll	Net Freight.	Lake and Canal.	River and Canals.	Lake and Canals.	Toll.	Net Freight.
	Chicago to Buffalo.	Buffalo to New York.	Chicago to New York.	Tolls—Buffalo to Albany.	Freight, with Tolls deducted.	Chicago to Kingston.	Kingston to Montreal.	Chicago to Montreal.	Tolls—Lake Erie to Montreal.	Freight, with Tolls deducted.
	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
1864	9.58	18.78	28.36	6.21	22.15	15.37	4.50	19.87	0.60	19.27
1865	9.78	18.84	28.62	6.21	20.41	14.92	4.00	18.92	0.60	18.32
1866	13.40	16.96	30.36	6.21	24.15	19.58	5.00	24.58	0.60	23.90
1867	6.67	15.69	22.36	6.21	16.15	10.87	4.00	14.87	0.60	14.27
1868	7.14	15.65	22.79	6.21	16.58	11.65	4.25	15.85	0.60	15.25
1869	6.81	16.31	23.12	6.21	16.91	11.32	4.25	15.55	0.60	14.95
1870	5.88	11.22	17.10	3.10	14.00	10.25	4.25	14.45	0.60	13.85
1871	7.62	12.62	20.24	3.10	17.14	12.35	4.25	16.55	0.60	15.95
1872	11.15	13.10	24.25	3.10	21.15	14.79	4.25	19.04	0.60	18.44
1873	7.62	11.57	20.19	3.10	17.09	14.20	4.00	18.20	0.60	17.60
Average Decade ..	8.56	14.87	23.45	4.96	18.57	13.53	4.27	17.79	0.60	17.18
1874	4.03	10.11	14.14	3.10	11.04	7.57	3.50	11.07	0.60	10.47
1875	3.42	8.01	11.43	2.07	9.36	6.67	3.25	10.01	0.60	9.41
1876	3.11	6.72	9.83	2.07	7.76	6.01	3.25	9.26	0.60	8.66
1877	3.67	7.39	10.96	1.03	9.93	7.21	3.25	10.46	0.60	9.86
1878	3.17	5.99	9.16	1.03	8.13	7.13	3.00	10.13	0.60	9.53
1879	4.72	6.98	11.68	1.03	10.65	7.69	3.00	10.69	0.60	10.09
1880	5.64	6.58	12.22	1.03	11.19	8.59	2.50	11.09	0.60	10.40
1881	3.40	4.88	8.28	1.03	7.25	7.25	2.00	9.25	0.60	8.65
1882	2.67	5.37	7.94	1.03	6.91	5.37	2.00	7.37	0.60	6.77
1883	3.40	4.90	8.30	0.00	8.30	6.06	2.75	8.81	0.60	8.21
Average ...	3.70	6.69	10.34	1.34	9.05	6.96	2.85	9.81	0.60	9.20

It would appear from the above that the average annual freight upon a bushel of wheat for these decades was :

For decade ending 1873 :—

	Per Bushel.
	Cts.
Chicago to New York.....	23.54
Chicago to Montreal.....	17.79
Balance in favor of Montreal.....	5.75
Average toll (Erie Canal).....	4.96
Average toll (St. Lawrence route).....	0.60
Chicago to New York, deducting toll.....	18.58
Chicago to Montreal, deducting toll.....	17.19

As will be perceived, Montreal had, during this decade, the great advantage of nearly 5 cents toll on the Erie Canal; nor did this heavy toll, which had con-

tinued for years before, establish a trade down the St. Lawrence, which the abolition of 6 mills toll on our own canals is supposed to effect. If we impose this toll upon the Erie Canal and relieve the St. Lawrence route from it, can it be possible this action would effect a revolution in the channels of trade which 5 cents in the first decade, and 1·34 cents in the second, failed to accomplish?

For the decade ending 1883, freights were:—

	Per Bushel. Cts.
Chicago to New York.....	10 34
Chicago to Montreal.....	9 81
In favor of Montreal.....	0 53
Average toll (Erie Canal).....	1 34
Average toll (St. Lawrence route).....	0 60
Chicago to New York, deducting toll.....	9 00
Chicago to Montreal, deducting toll.....	9 20

In the latter decade the rates were much lower. On the St. Lawrence route they fell with the reduction of tolls upon the Erie Canal, and reduced charges for transport both on the lakes and canal.

Upon the Erie route, in the second decade, there were reasons for the reductions of the cost of actual transport; upon the St. Lawrence route there have been none, as the cost of transport was not more expensive during the first decade than during the second, as the character of the transport is the same, the effect of the enlargement of the Welland Canal being inappreciable.

Making a still further analysis, we have the following table:—

Statement of Average Amount of Freight Rates for two decades, on a Bushel of Wheat from Chicago to Buffalo and Kingston by Lake, and from Buffalo to New York, and Kingston to Montreal, by canal boat or barge, per bushel, per ton, and per ton per mile, with canal tolls deducted.

	Per Bushel. Cents.	Per Ton. \$ cts.	Per Ton per Mile.
Lake Vessel—Decade ending 1873:—			
Chicago to Buffalo.....	8 56	2 85	3 17
Chicago to Kingston.....	12 93	4 31	3 92
Lake Vessel—Decade ending 1883:—			
Chicago to Buffalo.....	3 70	1 23	1 37
Chicago to Kingston.....	6 36	2 12	1 93
Canal Boat or Barge—Decade ending 1873:—			
Buffalo to New York.....	9 90	3 30	6 60
Kingston to Montreal.....	4 27	1 42	7 60
Canal Boat or Barge—Decade ending 1883:—			
Buffalo to New York.....	5 35	1 78	3 56
Kingston to Montreal.....	2 85	0 95	5 28
Lake and Canal—Decade ending 1873:—			
Chicago to New York.....	18 57	6 15	4 39
Chicago to Montreal.....	17 18	5 70	4 49
Lake and Canal—Decade ending 1883:—			
Chicago to New York.....	9 05	3 01	2 15
Chicago to Montreal.....	9 21	3 07	2 40

From the foregoing, we find, taking, say, 900 miles from Chicago to Buffalo, and 1,100 miles from Chicago to Kingston, there is for the first decade, a charge for transport of $\frac{7}{10}$ mills per ton-mile greater to Kingston than to Buffalo, and in the second decade $\frac{1}{10}$ mills greater. One reason for this extra charge was the small scale of navigation increasing the cost of transport. Taking the canal boat and barge, we have, for the first decade, 1 mill per ton mile greater charged from Kingston to Montreal than from Buffalo to New York; in the second decade 1.72 mills per ton-mile greater from Kingston. For this extra charge there can be no reason; it might be asserted that the longer distance of transport by the Erie Canal boat, if it be nearly treble, the St. Lawrence barge has treble the capacity of a canal boat, which would fully compensate for the "longer haul." During the first decade the forwarding charges from Kingston to Montreal must have been excessive; in the second decade they are still excessive. In any discussion of this kind, the comparison of figures can only be made; the canal boat may carry below cost, and the Kingston barge have so little business that these charges may, in reality, only be paying a reasonable profit. The facts remain the same that the charges per ton mile from Chicago to Montreal are greater than from Chicago to New York; that no Government could do more than provide the means of cheaper transportation that is now accomplished by the enlarged Welland Canal. When the freight rates per ton-mile are the same on both routes, the reduction of tolls might be asked; when that date arrives those asking can be told that the superior advantages of the St. Lawrence route, as to economy of transport simply, without relation to questions of trade, to rectify which becomes a system of bounties and subsidies; that the St. Lawrence route gives a cheaper transportation per ton-mile so much below the rival route that those who transport through our own system can well pay the tax necessary for its maintenance.

Numerous complaints have been made by vessel men on account of the detentions they are subjected to at Kingston. There appears to be sufficient barge accommodation to do a large business, but the forwarders complain that their barges are often detained in Montreal, very little grain going into store; sometimes there is a considerable delay in transferring cargoes. Fogs in the river may prevent the arrival of barges at Kingston at the date expected; there being no storage capacity, the lake vessel is compelled to await their arrival before her cargo can be discharged. As to the accommodation at Kingston, I quote the evidence of S. Neelon, Esq., M.P.P., ship-owner. He states that there should be a storage capacity of 1,000,000 bushels, which is undoubtedly the case, if there is a large business to be done; for it is certain, vessel owners in the west will not accept freight at low rates to a port where they may be at the loss of fifteen days demurrage.

Evidence of S. Neelon, Esq., M.P.P., before Select Committee on Interprovincial Trade, 1883.

Would it not be better to take the grain in barges, than to deepen the canals? Vessels will go from Chicago to Kingston in five or six days, and I have seen them lay alongside the docks at Kingston three or four days to get a chance to unload. I had vessels myself, which were detained three or four days during the past year waiting to unload; in fact, making storehouses of my vessels, because Kingston people have not enterprise enough to put up elevators.

But the reason the barges are not at Kingston, is because they are kept at Montreal as storehouses. There are more barges now than would carry three times the grain that went forward last year?

A good many people in this country lack that spirit of enterprise that they ought to have, in order to make our canals attract more business than passes through them. As an instance of this, let me compare Kingston with Buffalo. In the morning fifty or sixty vessels will go into Buffalo, and on account of the large number of elevators there, the cargoes are all transferred in the course of the day, and in some instances they are reloaded and away again, in place of lying at Kingston, as they often do, for three or four days, for want of elevators or storage capacity, which should be there. I have sometimes been told that the barges would be there to-morrow, and to-morrow would come, but no barge, as it had been detained by the fog; but many days would pass without fog, and still the barge did not arrive. If they had two elevators there, holding 500,000 bushels each, these vessels would be unloaded right away, and the grain could be put into the barges when they arrived, but now the Kingston people make storehouses of our vessels.

You said there was no accommodation last year. As a matter of fact there was only 6,000,000 bushels of grain unloaded altogether at Kingston last year?

If there had been more it would have been worse. I have had vessels lying fifteen days in Kingston before unloading.

Although the freight charges per ton-mile are higher by the St. Lawrence route, the various items which make up these, exclusive of the actual cost of transport, are lower. It would be wholly unnecessary to mention details of this character were it not for the stress placed upon the effect of the present canal toll.

Insurance is charged to property from Chicago to Montreal; from Chicago to Buffalo it is charged to property; and from Buffalo to New York the canal boatmen pay the insurance. At Buffalo $\frac{3}{4}$ cent is paid for elevating in addition to that charged to lake vessels; that, with a small amount for fire insurance, is charged to property.

The following are some of these charges:—

Incidental charges.	Buffalo. Per Bushel.	Kingston. Per Bushel.
Lake Vessels.	Cents.	Cents.
Shovelling up.....	0·4	0·2½
Elevating, charged to vessel.....	0·1½	} 0·2½
do do property.....	0·7½	
Welland Canal tolls.....		0·6
Total.....	1·2½	1·1
Canal Boats and Barges.		
Trimming.....	0·1½	0·0½
Insurance to New York.....	0·3½	
Elevating, New York.....	0·5	0·2½
Shovelling, Montreal.....		0·1½
Commission on freight.....	0·2	
Total.....	1·1½	0·4

There are other charges which the canal boatmen are subjected to that the forwarder at Kingston is free from. Bitter complaints are made by them against the

imposition and charges they are subject to. They being poor, unable to pay back charges, insurance, &c., it has given rise to a class of commission merchants at Buffalo, called "scalpers," who advance money to boatmen, and often contract for through shipments, force down canal freights for their own benefit. An authority at Buffalo states that scalpers are a necessary evil; the chief objection to them is when they enter into the through contract business, but he hopes the time will arrive when the boatmen will be so prosperous that they will not require the assistance of middle men. This season the boatmen have endeavored to form an association to rid themselves of commissions and charges. If all these charges are taken together it would be fully 1 cent per bushel, which would reduce the present rates of canal freight upon wheat to $2\frac{1}{2}$ cents; that is, these boatmen carry 500 miles what the forwarding companies are charging $2\frac{1}{2}$ cents for 180 miles. At the same rate as actually received by the boatmen, the rate from Kingston to Montreal should be 0.81 cents, or at the rates quoted 1.16 cents instead of $2\frac{1}{2}$ cents.

I have made a rough estimate of the cost of transportation from Kingston to Montreal in barges of 30,000 bushels capacity. From $1\frac{1}{4}$ to $1\frac{1}{2}$ cents per bushel should be about the freight rates if the barges were fully occupied during the season. The only reason or cause, which is not remedial, why there should not be cheaper transportation between Kingston and Montreal, is the lack of business, which does not decrease freight rates materially by the forwarders, but does upon the other route. The average freight on wheat was, in 1883, from Buffalo to New York, within a fraction of 5 cents per bushel. The average rate from Kingston to Montreal, $2\frac{1}{4}$ cents. The ruling rates at this date, 22nd June, are, to the former $3\frac{1}{4}$ and to the latter $2\frac{1}{2}$, or a reduction by the boatmen of $\frac{3}{4}$ cent and $\frac{1}{4}$ cent by the forwarding companies.

The complaints of forwarders with regard to tolls date many years back, as do also complaints of merchants against them, of excessive freight charges. In 1827, during the early days of water transport, before the construction of the St. Lawrence canal, after the first Lachine Canal was built, when the only means of surmounting the other rapids was by the King's Locks, complaints were made of excessive toll charges to the Ordnance officers; it was shown that large profits were made by the forwarders. Still later, when the western country was opening up, when the Erie Canal was year by year increasing its traffic and diverting from the St. Lawrence route trade which formerly sought that outlet, forwarders of these days were accused of excessive charges and large profits. When the Rideau Canal was constructed, it, with the Welland Canal, forming a better water communication to the seaboard than the Erie Canal, and at a critical period in the St. Lawrence route, the excessive charges made by forwarders resulted in a Committee of the Legislature being appointed to enquire into the subject of tolls upon the Rideau Canal and the heavy charges of the carrier. It was supposed that when the canal was constructed, effecting a large barge and steamboat transportation, the charges would be reduced from the old days of the batteau and Durham boat from Prescott to Montreal.

A Select Committee was appointed in 1839, and by the examination of merchants and millers, it was found that since the construction of the Rideau Canal, the freights on imports and exports had been actually increased, at least 50 per cent., instead of being decreased in that proportion; that the freight upon a barrel of flour had increased from 25 to 40 cents, and upon merchandise back had increased 50 per cent.

The principal cause was that there were no tow-paths upon the canal—that its superiority as a steamboat navigation was actually an injury to the route. Steam power being necessary, the canal was not open to all classes of competitors. One forwarding company had obtained the entire possession of all the steamboats upon the canal, which gave them the power that the exclusive possession of the tow-path upon any other canal would give. No craft could pass through the canal without submitting to the exactions of the company. The forwarders who had been formerly on the St. Lawrence entered into an agreement and constituted a formidable monopoly, subjecting the public to any price they might please to impose. The Committee recommended that tow-boats be placed upon the canal; that the forwarding monopoly be suppressed; that transport and communication would be open to every person who could command sufficient capital to build a barge. The Committee states that general dissatisfaction has prevailed in all parts of the Province for the last ten years, among all classes of the trading community, for having been subjected to an increase in freight charges, instead of reduction, which had been anticipated on the completion of the Rideau Canal; but no means of reduction has heretofore been offered. Resolutions were offered by the Committee. They regret that so noble a work as the Rideau Canal has a tendency rather to embarrass than propitiate the trade of the Province, as by the evidence it is shown that the transportation of products and merchandise, the growth and consumption of the Province, had actually increased from 50 to 100 per cent. That it was most important to do away with the monopoly of transport, by the Government putting tow-boats upon the canal, or compelling the company to tow at certain fixed rates. A member of the firm of Buchanan & Co. testified that by the St. Lawrence River, in the days of batteaux and Durham boats, they had paid 90 per cent. less for transport of some articles, and that since the construction of the Rideau Canal, light goods had increased 400 to 500 per cent. In 1841, a Select Committee was appointed to deal with the same subject. It was stated that in 1838, 1839 and 1840, the cost of transport of a ton of merchandise from Montreal to Kingston was £3 2s. 6d., deducting toll 9s. 3d., leaving a balance to the forwarder of £2 13s. 3d.; that for the same distance, upon the Erie Canal, the charge was £2 4s. 4d., deducting toll £1 6s. 3½d., leaving to the forwarder 18s. 0½d.

The same causes were stated as by previous committee, absence of tow path, the steam power being in possession of a private company, rendering the canal as completely under the control of a monopoly, as if a railway built by a company placed the control of the propelling or locomotive power in the hands of a separate company, with diverse and separate interests—recommend that seven tug boats be placed on the line to tow all boats. A committee of the House was subsequently appointed upon this subject.

I have alluded to this early history, to show that in the most important stage of transportation by the St. Lawrence route, when the West was being settled, that the action of the forwarders had something to do with turning the trade not only of the Western States, but of Western Canada, through the Erie Canal. The very advantages of the St. Lawrence route, since the construction of the St. Lawrence canals, has been its disadvantage. Upon the Erie Canal any person who was able to build a canal boat and buy the horses necessary for towing, could enter the forwarding business, and through competition reduced transport to the minimum.

Upon the St. Lawrence route, there being no tow path, except upon the small percentage of canal navigation, the scale of which being much larger than upon the Erie Canal, the more expensive barge and motive power required greater capital than the small boat and horses, transportation consequently fell into the hands of companies, either restricting competition or more easily preventing it by combination. The results have been, as previously stated, that on the inferior navigation, as to absolute economy of transport, there have been cheaper freight rates.

DIFFERENTIAL FREIGHT RATES BETWEEN COMPETING ATLANTIC PORTS.

It becomes necessary to allude to many questions which may appear foreign to the subject, on account of the diminution of the grain trade of Montreal and the reasons ascribed, among which so constantly and continually set forth latterly canal tolls.

After the civil war—on account of which, through the disorganization of business on other transportation routes, Montreal benefitted, large quantities of grain seeking the St. Lawrence route, which would not have otherwise done—Baltimore and Philadelphia principally, seeing the great advantages of acquiring business connections with the grain producing territory of the West, as New York controlled and enjoyed the lion's share of the export trade in cereals, these cities being weighted by higher ocean freights and other disadvantages, claimed that railroad freight rates should be so discriminated that grain could be shipped from western ports through these cities to the consumers in Europe at the same rate as through New York.

An agreement was entered into in 1869, that the rate of freight from the same point west to these cities should be 10 cents per 100 lbs. less than to New York. The railways terminating in that city, finding that a greater quantity of products, than contemplated, was being carried over other roads, requested that the difference should be reduced one half—to 5 cents per 100 lbs., which was not conceded. A war of rates followed, which led to this reduction. New York being dissatisfied with this difference, another "railway war" started in 1876, and in 1877 the rates were reduced to 3 cents per 100 lbs. in favor of Baltimore, and 2 cents per 100 lbs. in favor of Philadelphia. These "differential rates" have been the cause of much bitter feeling between the business men and the railways terminating at these ports. When business becomes dull, or from other causes, cutting of rates commences; the "differentials" are in abeyance, and a war is inaugurated as in 1881, which was very severe,

and again, in 1884, of a more limited extent. The increased number of competing through lines, and the great loss from these ruinous competitions, amounting to many millions of dollars, led to the pooling system, and apportionment of the traffic from western points among the through lines. The percentage of freight allotted and numerous other matters, with reference to transportation, are arranged by an executive committee of officers of the roads, and a commissioner or executive officer, upon whom falls all the labor of arranging and carrying out the details of this complicated system. This officer, when satisfactory proof is given that any of the lines are cutting rates, orders a general reduction (as has been done lately, below the cost of transport); the roads which obtained more than their share of traffic, through cutting the rates, they, by other roads becoming as low, equalize matters and results, after the roads have become sick of transporting below cost, in an increase of rates, to be maintained until the next periodical disruption. This pooling system, if capable of being effectually operated, constitutes in reality a gigantic monopoly, which would control the transportation of the products of the northern half of this continent, through the combination of the east and west trunk lines, with a power to make what rates they please, and not subjected, as in every department of commerce, or transport by water, to regulation by competition. The importance of maintaining and providing efficient, waterways is obvious, for, without the Erie Canal and the lakes and River St. Lawrence, by a combination of this kind the productions, industries and interests of the greater part of the continent will be at their mercy. The various railways to competing points have their assigned percentage of west-bound freight. Taking railways more directly connected with this subject, Boston and New England points, a Canadian road, or one in which there is a good deal of Canada money, the Grand Trunk, with its connections, is in the pool, and has a percentage assigned of competitive traffic to these points.

Their great competitor, the Boston and Albany road, being a more direct line, it has been claimed by the Grand Trunk that, without lower rates, they were unable to obtain business to and from Boston. It would not become a party to what is known as the Saratoga agreement, in 1874, without the right of a lower rate being acknowledged by the former road, which was not done, leading to a war which has been periodically repeated.

It is evident that Montreal cannot participate in the reduced transportation by those wars, there being no competing lines. Montreal is about the same distance from Chicago as Philadelphia; the rate to Philadelphia at present is 7 cents per 100 lbs. less than to Boston. If Montreal had this discrimination in her favor, why should she permit a carload of grain, during the season of navigation, to go to Boston for export? If she had not, we have a Canadian road carrying business past our own port. We find that New York is continually complaining of the discrimination in favor of Baltimore and Philadelphia. Montreal's rate should be, as I understand it is, at present 2 cents per 100 lbs. less than to New York—the canal toll is only 1 cent per 100 lbs. Why has she not secured this rail business in the same proportion, allowing for the shorter season of navigation, as Baltimore and other rail ports?

In 1866 and 1879 the percentage of aggregate receipts of grain at Atlantic ports were:—

Percentage of Receipts of Grain—Atlantic Ports.	1866.	1879.
	per cent.	per cent.
Baltimore.....	8·6	20·09
Montreal.....	10·9	6·74
Boston and Philadelphia.....	19·3	24·11
New York.....	61·2	49·06

Baltimore and Montreal have principally an export trade. I have not the percentages of exports before 1873; in that year and 1883 they were—

Percentage of Exports of Grain—Atlantic Ports.	1873.	1883.
	per cent.	per cent.
Boston.....	2·45	8·20
Philadelphia.....	5·50	6·10
Montreal.....	19·60	12·00
Baltimore.....	10·35	16·90
New York.....	62·10	56·80

The marked increase in business of all-rail ports is obvious, and still the cry is that canal tolls are diverting the business from Montreal, while she has every advantage, as far as mileage is concerned, as any of the competing railway ports, as may be seen from the following table of distances:—

	Miles.
Chicago to Philadelphia, Pennsylvania R.R.	822
Chicago to Montreal, Chicago and Grand Trunk R.R.	837
Chicago to Baltimore, Baltimore and Ohio R.R.	840
Chicago to New York, Pennsylvania R.R.	912
“ “ “ “ Canada Southern and New York Central Railway	980
Chicago to Boston, New York Central and Boston and Albany R.R.	1,034
Chicago to Boston, Grand Trunk and Central Vermont	1,169

For this rail business Montreal could claim, equally with Baltimore, for a discriminating rate, which would be much greater than canal tolls, against other Atlantic ports. During the past years, in which exports have been increasing from them and decreasing from Montreal, she could state her disadvantage through a five-month closing of navigation, a long gulf and river navigation, the distance from the open ocean preventing “ocean tramps,” regulators of freight rates, seeking her harbour; higher rates of insurance and higher freight rates, though the latter does not appear to be the case at present. One of the claims of Baltimore and Philadelphia to the maintenance of these differential rates is the great

quantity of ocean tonnage seeking New York, the large number of Trans-atlantic steamship lines which regularly ply to that port. Montreal can claim its differential rate with equal force. Although it is stated, what might be the case, the reasons why she has not increased her rail receipts, whether through the apathy of her merchants or the indifference of the Grand Trunk Railway, can only be determined by those who are aware of the efforts that have been made. The disadvantage Montreal is under for this business is shown in the following heading:

TERMINAL FACILITIES OF ATLANTIC PORTS.

As the costs and charges, either to property or the ocean vessel, are important factors, they may be alluded to.

As formerly stated, Montreal has equal opportunities with other ports to obtain all-rail shipments. For this business the Grand Trunk Railway has made no provisions in the way of elevators and stores, where the ocean vessel can run alongside and be loaded. All grain arriving by rail has to be either elevated into store or put in barges, floated down to the ocean vessel and elevated; or, as noted in the papers, a consignment of grain came by rail to Montreal in bags and was carted to the steamer, an unheard of proceeding at other grain-shipping ports.

What do we find at other ports? At Baltimore, the Baltimore and Ohio Railway has three elevators, with a storage capacity of 3,800,000 bushels, receiving capacity, 1,500 cars, and a daily delivering capacity of 2,000,000 bushels. Steamers loading at these elevators are charged no wharfage. At Philadelphia adequate facilities are provided for ocean vessels to load at railway elevators at a charge of 1 cent per ton per day for wharfage. At New York the New York Central and Hudson River Railway have an elevator storage capacity of 2,300,000 bushels, and daily transfer capacity of 60,000. One-quarter cent for elevating, no charge for wharfage. The Erie Railway has a large elevator, at which there is charged a wharfage of 2 cents per ton for first 200 tons, and $\frac{1}{2}$ cent per ton above this, per day. At Boston, the Boston and Albany Railroad has an elevator of 1,000,000 bushels storage capacity, at which there is no charge for wharfage. For water-borne grain Montreal is well provided with floating elevators, the charges being low compared with New York—less than one-half since the late reduction.

The following table, taken from the report of the Maritime Exchange, Philadelphia, shows the different methods of shipments and cost upon export grain at New York, Philadelphia and Baltimore, from which it appears that Montreal is at no disadvantage, except upon grain shipped all rail.

A statement, is also given, of the number of elevators, their storage and transfer capacity, at different Atlantic ports.

tic ports

1879.

per cent.

20.09
6.74
24.11
49.08

the per-

1882.

per cent.

8.20
6.10
12.00
16.90
56.80

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Memorandum of the Expenses outside of Inland Freight, incurred by a Shipper on sundry cargoes of Grain, each 30,000 bushels, all bought at the same price in the West and brought forward to Seaboard at same rate of freight, and shipped from New York, Philadelphia and Baltimore, respectively, in way stated hereunder, the Shipper in all cases paying the vessel's bill for Trimming, or for Trimming and Stevedore.

Route.	Shipped in Bulk.			Shipped two-thirds in Bulk, one-third in Bags.		
	Terminal.	Stevedore.	Total.	Terminal.	Stevedore.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Shipped by rail and through New York railroad elevators.....	75 00	60 00	135 00	75 00	120 00	195 00
Shipped as above, but on special inland bill of lading.....	No charge	60 00	60 00	No charge	120 00	120 00
Shipped by lake and canal, transferred by floating elevator.....	300 00	210 00	510 00	300 00	262 50	562 50
Shipped by lake and canal, put into store and transferred from store direct to vessel.....	150 00	210 00	360 00	150 00	262 50	412 50
Shipped by lake and canal, put into store, thence lightered to vessel and transferred by floating elevator.....	825 00	210 00	1,035 00	825 00	262 50	1,087 50
Shipped by rail and through Philadelphia elevators.....	375 00	75 00	450 00	375 00	115 00	490 00
Shipped by rail and through Baltimore elevators.....	375 00	60 00	435 00	375 00	90 00	465 00
Shipped as above, but on special inland bill of landing to Baltimore.....	No charge	60 00	60 00	No charge	90 00	90 00

Storage and Elevator capacity of Atlantic Ports.

Names of Ports.	No.	Storage Capacity.	Transfer Capacity.
New York—			
Stationary elevators.....	24	24,750,000	244,500 bushels per hour.
Floating do	34	.....	145,300 do
Baltimore—			
Stationary elevators	5	5,050,000	Receiving capacity daily 2,080 cars.
Floating do	4	.....	Delivering daily 2,675,000 bushels.
Philadelphia—			
Stationary elevators	6	4,110,000	Receiving capacity daily 800 cars.
Floating do	4	.....	780,000 bushels daily.
Boston—			
Stationary elevators	5	1,800,000	15,000 bushels per hour.
Floating do	2	.....	
Montreal—			
Stationary elevators	4	2,000,000	3,000 to 4,000 bushels per hour, each
Floating do	12	.....	51,000 bushels per hour.

PORT CHARGES.

Some complaints have been made of excessive port charges at Montreal. I have compared these charges with those at competing ports, as given by Theodore Hunter, Esq., in his compilation, a work termed "Port Charges of the World," and Montreal bears favorable comparison, especially in the cost of discharging and loading, or stevedore charges; wharfage appears to be higher than at other ports to vessels loading with grain. As Montreal has great disadvantages to other ports, for sailing vessels, no reference will be made to the cost attending them, Montreal being essentially a port for steam tonnage; at present nearly 90 per cent. of total tonnage is steam.

Mr. Hunter's work is used by those engaged in shipping and would be an authority with that class of vessels known as "tramps," which it is desirable to attract to any port. For comparison he has, at my request, given me the cost attending a steamer entering and clearing at seven ports. As vessels seldom enter with a full dead weight cargo, for the purpose of comparison, a vessel is taken drawing the same depth of water in and out. The United States tonnage dues being annual they would be reduced by the number of trips the steamer would make in the year.

Charges on a Steamer of 1,500 net register tons, drawing 21 feet, loading Inward with dead weight cargo, and Outward with grain in bulk and bags, at the Ports of Montreal, Boston, New York, Philadelphia, Baltimore and New Orleans.

MONTREAL—INWARDS.		Amount.
		\$ cts.
Pilotage to Quebec, 21 feet, at \$3 60 per foot		75 60
do Quebec to Montreal, up and down, at \$2.50.....		52 50
Entering and clearing fees.....		10 00
Tonnage dues, 1,500 tons, at 5 cents.....		75 00
Police do at 3 cents		45 00
Hospital do at 2 cents.....		30 00
Discharging 2,410 tons, at 20 cents		482 00
Port Warden fees.....		5 00
Wharfage, 1½ cents per ton per day, on 1,500 tons, \$22.50, ten days.....		225 00
		1,000 10

MONTREAL—OUTWARDS.		
Ceiling 1,500 tons, at 50 cents per ton		750 00
Elevating charges on 3,240 tons, at 20 cents.....		648 00
Stowing 9,000 bags, at 5 cents.....		450 00
Hire of bags, at 4 cents.....		360 00
Export fee on 108,000 bushels, at 15 cents.....		162 00
Port Warden's fee, inspecting lining, at 6 cents.....		11 00
do do loading, at 5 cents.....		
Underwriter's survey.....		10 00
Wharfage, 10 days.....		225 00
Pilotage, 21 feet, at \$3.15.....		66 15
		2,682 15

Charges on a Steamer of 1,500 net register tons, drawing 21 feet, loading inward with dead weight cargo, &c.—Continued.

PORTLAND, MAINE—INWARDS.		Amount.
		\$ cts.
Pilotage, 21 feet, at \$2.50.....		52 50
Custom House entry and permits.....		7 00
*Tonnage dues, 1,500 tons, at 30 cents.....		450 00
Health dues. (None except from sickly ports).....		
Discharging 2,410 tons dead weight, at 30 cents.....		723 00
Port Wardens.....		6 00
Wharfage, free while discharging, otherwise 25 cents per 100 tons, 5 days, at \$3.75.....		18 75
		1,257 25

PORTLAND, MAINE—OUTWARDS.		
Ceiling 108,000 tons, at 1 cent.....		1,080 00
Elevator charges, 81,000 bushels, at 1 cent.....		810 00
Filling and loading 9,000 bags, at 2½ cents.....		225 00
Bag hire, at 5 cents.....		450 00
Surveyor's fee.....		10 00
Wharfage, no charge while loading, 5 days.....		18 75
Pilotage, 21 feet, at \$2.50.....		52 50
		2,646 25

BOSTON, MASS.—INWARDS.		
Pilotage on 21 feet (winter).....		113 40
Custom House entry and permits.....		7 00
Health dues.....		8 00
*Tonnage dues on 1,500 tons, at 30c. (annually).....		450 00
Port Warden.....		10 00
Discharging 2,410 tons, dead weight, at 30 cents.....		723 00
Wharfage, 5 days, ½ cent per day on 1,500 tons, no charge while discharging.....		37 50
		1,348 90

BOSTON, MASS.—OUTWARDS.		
Ceiling for 108,000 bushels of grain, at 1½ cents.....		1,350 00
Trimming, per 1,000 bushels, at \$2.....		216 00
Stowing 9,000 bags, at 1½ cents.....		135 00
Bag hire, at 5 cents.....		450 00
Underwriter's survey.....		10 00
Wharfage, 5 days, no charge while unloading.....		37 50
Clearing from Custom House.....		3 55
Pilotage.....		73 50
		2,275 55

* Tonnage Dues.—Since this statement was compiled, a new law came in force July 1st, 1884. The United States Customs Department collects three cents per ton on foreign vessels arriving, until a vessel has paid fifteen cents per ton, instead of thirty cents per annum as formerly. To compare with Montreal reduce charges inwards at each United States port \$405.

th dead

Charges on a Steamer of 1,500 net register tons, drawing 21 feet, loading inward with dead weight cargo, &c.—Continued.

mount.

\$ cts.

52 50

7 00

450 00

723 00

6 00

18 75

1,257 25

NEW YORK—INWARDS.

Amount.

\$ cts.

Pilotage on 21 feet (winter)..... 140 50

Custom House, entry and permits..... 7 00

Health dues..... 6 50

Tonnage dues, 1,500 tons, at 30 cents (annually)..... 450 00

Port Wardens..... 6 00

Discharging 2,410 tons, dead weight, at 40 cents..... 964 00

Wharfage, 200 tons, at 2 cents, \$4.00; 1,300 tons, at 2½ cents, \$6.50; 10 days..... 105 00

1,679 00

NEW YORK—OUTWARDS.

1,080 00

810 00

225 00

450 00

10 00

18 75

52 50

2,646 25

Ceiling for 108,000 bushels, at 1 cent..... 1,080 00

Elevator charges per 1,000 bushels, at \$6.50..... 702 00

Stowing 9,000 bags, at 2½ cents..... 225 00

Bag hire, at 4 cents..... 360 00

Surveyor's fees (underwriters)..... 10 00

Wharfage 10 days..... 105 00

Clearing from Custom House..... 3 55

Pilotage (winter)..... 103 75

2,589 30

PHILADELPHIA—INWARDS.

113 40

7 00

8 00

450 00

10 00

723 00

37 50

1,348 90

Pilotage, 21 feet..... 96 10

Custom House entry and permits..... 7 00

Health fee..... 10 00

Tonnage dues (annually) 1,500 tons, at 30 cents..... 450 00

Port Wardens..... 10 00

Discharging 2,410 tons, dead weight cargo, at 35 cents..... 843 50

Wharfage 10 days, \$15 per day..... 150 00

(This wharfage is, by agreement, ranging from \$10 to \$20 per day.)

1,566 60

PHILADELPHIA—OUTWARDS.

1,350 00

216 00

135 00

450 00

10 00

37 50

3 55

73 50

2,275 55

Ceiling for 108,000 bushels, at 1 cent..... 1,080 00

Elevator charges on 81,000 bushels, per 1,000, \$3..... 243 00

Stowing 9,000 bags; 27,000 bushels, per 1,000, \$7..... 189 00

Bag hire, 9,000, at 4 cents..... 360 00

Wharfage, 1 cent per ton per day on 15,000 tons, at \$15, 10 days..... 150 00

Clearing from Custom House..... 3 55

Pilotage..... 63 00

2,088 55

ly 1st, 1884.
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Charges on a Steamer of 1,500 net register tons, drawing 21 feet, loading inward with dead weight cargo, &c.—Continued.

BALTIMORE—INWARDS.	Amount.
Pilotage, 21 feet.....	\$ cts.
Custom House entry and permits.....	105 00
Health fee on 1,500 tons, at 1 cent.....	7 00
Tonnage dues, 1,500 tons, at 30 cents.....	15 00
Discharging 2,410 tons dead weight cargo, at 30 cents.....	450 00
Wharfage, 1 cent per ton, 10 days.....	723 00
	150 00
	1,450 00

BALTIMORE—OUTWARDS.	
Ceiling, 108,000 bushels, at 1 cent.....	1,080 00
Elevator charges on 81,000 bushels, at \$7.50 per 1,000 bushels.....	607 50
(Which includes trimming.)	
Stowing 9,000 bags, 27,000, at \$5.50 per 1,000.....	148 50
Filling and sewing bags, 9,000, at 1½ cents.....	135 00
Bag hire, at 3½ cents.....	315 00
Surveyor's fees (underwriters).....	15 00
Wharfage, 10 days, at \$2 per day.....	20 00
Pilotage.....	105 00
	2,428 00

NEW ORLEANS—INWARDS.	
Pilotage, 21 feet, at \$4 50.....	94 50
Custom House entry and permits.....	7 00
Health fee.....	30 00
Tonnage dues, 1,500 tons, at 30 cents.....	450 00
Discharging 2,410 tons dead weight cargo, at 40 cents.....	964 00
Wharfage, 1,500 tons, at 15 cents.....	225 00
Port Warden fees.....	25 00
Harbor dues.....	20 00
	1,815 50

NEW ORLEANS—OUTWARDS.	
Ceiling, 108,000 bushels, at 1 cent.....	1,080 00
Elevator charges paid by shipper.....	
Trimming 81,000, at \$2 per 1,000.....	162 00
Stowing 9,000 bags, at 15 cents.....	450 00
Filling do 1½ cents.....	135 00
Bag hire do 4 cents.....	360 00
Surveyor's fee.....	20 00
Wharfage, 1,500 tons, at 5 cents, for 60 days.....	75 00
Pilotage, 21 feet, at \$4 50.....	94 50
	2,376 50

The following statement shows the freight rates on 60 pounds of grain by steamer to Liverpool, from several competing ports. It will be observed that from Montreal, some years ago, the freight rates were higher, but that during the last few years there has been little difference in ocean rates.

\$ cts.
106 00
7 00
15 00
450 00
723 00
150 60
450 00

1,080 00
607 50
148 50
135 00
315 00
15 00
20 00
105 00
2,426 00

94 50
7 00
30 00
450 00
964 00
225 00
25 00
20 00

1,815 50

1,080 00
162 00
450 00
135 00
360 00
20 00
75 00
94 50

steamer
Montreal,
ew years

Comparative Monthly Statement of Average Ocean Steamship Freight rates for Seven Months at Montreal, Boston, New York, Philadelphia and Baltimore to Liverpool. The rates are in sterling per bushel of 60 lbs.

	1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.
May.....	Montreal. s. 9. 99 p. 99 99	Montreal. s. 10. 10 p. 10 10	Montreal. s. 9. 99 p. 99 99	New York. s. 4. 00 p. 5 00	New York. s. 6. 00 p. 6 00	Montreal. s. 7. 00 p. 7 00	New York. s. 7. 00 p. 7 00	Montreal. s. 1. 00 p. 1 00	Montreal. s. 8. 00 p. 8 00	New York. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00
June.....	Montreal. s. 9. 99 p. 99 99	Montreal. s. 10. 10 p. 10 10	Montreal. s. 9. 99 p. 99 99	New York. s. 4. 00 p. 5 00	New York. s. 6. 00 p. 6 00	Montreal. s. 7. 00 p. 7 00	New York. s. 7. 00 p. 7 00	Montreal. s. 1. 00 p. 1 00	Montreal. s. 8. 00 p. 8 00	New York. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00
July.....	Montreal. s. 9. 99 p. 99 99	Montreal. s. 10. 10 p. 10 10	Montreal. s. 9. 99 p. 99 99	New York. s. 4. 00 p. 5 00	New York. s. 6. 00 p. 6 00	Montreal. s. 7. 00 p. 7 00	New York. s. 7. 00 p. 7 00	Montreal. s. 1. 00 p. 1 00	Montreal. s. 8. 00 p. 8 00	New York. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00
August.....	Montreal. s. 9. 99 p. 99 99	Montreal. s. 10. 10 p. 10 10	Montreal. s. 9. 99 p. 99 99	New York. s. 4. 00 p. 5 00	New York. s. 6. 00 p. 6 00	Montreal. s. 7. 00 p. 7 00	New York. s. 7. 00 p. 7 00	Montreal. s. 1. 00 p. 1 00	Montreal. s. 8. 00 p. 8 00	New York. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00
September.....	Montreal. s. 9. 99 p. 99 99	Montreal. s. 10. 10 p. 10 10	Montreal. s. 9. 99 p. 99 99	New York. s. 4. 00 p. 5 00	New York. s. 6. 00 p. 6 00	Montreal. s. 7. 00 p. 7 00	New York. s. 7. 00 p. 7 00	Montreal. s. 1. 00 p. 1 00	Montreal. s. 8. 00 p. 8 00	New York. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00
October.....	Montreal. s. 9. 99 p. 99 99	Montreal. s. 10. 10 p. 10 10	Montreal. s. 9. 99 p. 99 99	New York. s. 4. 00 p. 5 00	New York. s. 6. 00 p. 6 00	Montreal. s. 7. 00 p. 7 00	New York. s. 7. 00 p. 7 00	Montreal. s. 1. 00 p. 1 00	Montreal. s. 8. 00 p. 8 00	New York. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00
November.....	Montreal. s. 9. 99 p. 99 99	Montreal. s. 10. 10 p. 10 10	Montreal. s. 9. 99 p. 99 99	New York. s. 4. 00 p. 5 00	New York. s. 6. 00 p. 6 00	Montreal. s. 7. 00 p. 7 00	New York. s. 7. 00 p. 7 00	Montreal. s. 1. 00 p. 1 00	Montreal. s. 8. 00 p. 8 00	New York. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00

	1878.	1879.	1880.	1881.	1882.	1883.
May.....	Montreal. s. 11. 00 p. 11 00	Montreal. s. 10. 00 p. 10 00	Montreal. s. 9. 00 p. 9 00	Montreal. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00	Montreal. s. 6. 00 p. 6 00
June.....	Montreal. s. 11. 00 p. 11 00	Montreal. s. 10. 00 p. 10 00	Montreal. s. 9. 00 p. 9 00	Montreal. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00	Montreal. s. 6. 00 p. 6 00
July.....	Montreal. s. 11. 00 p. 11 00	Montreal. s. 10. 00 p. 10 00	Montreal. s. 9. 00 p. 9 00	Montreal. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00	Montreal. s. 6. 00 p. 6 00
August.....	Montreal. s. 11. 00 p. 11 00	Montreal. s. 10. 00 p. 10 00	Montreal. s. 9. 00 p. 9 00	Montreal. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00	Montreal. s. 6. 00 p. 6 00
September.....	Montreal. s. 11. 00 p. 11 00	Montreal. s. 10. 00 p. 10 00	Montreal. s. 9. 00 p. 9 00	Montreal. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00	Montreal. s. 6. 00 p. 6 00
October.....	Montreal. s. 11. 00 p. 11 00	Montreal. s. 10. 00 p. 10 00	Montreal. s. 9. 00 p. 9 00	Montreal. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00	Montreal. s. 6. 00 p. 6 00
November.....	Montreal. s. 11. 00 p. 11 00	Montreal. s. 10. 00 p. 10 00	Montreal. s. 9. 00 p. 9 00	Montreal. s. 8. 00 p. 8 00	Montreal. s. 7. 00 p. 7 00	Montreal. s. 6. 00 p. 6 00

Montreal is at some disadvantage with regard to marine insurance. From a statement in a memorial of the Philadelphia Commercial Exchange the marine insurance in 1831, from New York, Philadelphia and Baltimore, ranged by sailing vessels from $\frac{7}{8}$ to $3\frac{1}{2}$ per cent., and by steam, $\frac{7}{10}$ per cent., each month during the year, less 20 per cent. on both. By steam from Montreal it is stated to range from $\frac{7}{8}$ to $3\frac{1}{2}$ per cent., and by sail, $1\frac{1}{2}$ to $6\frac{1}{2}$ per cent., less discount of 15 per cent.

One of the arguments against abolishing the differential rates was that Philadelphia and Baltimore had a greater proportion of sail shipments, therefore, the average insurance on shipments of grain was greater than from New York, on account of the excess of steam tonnage, 74 per cent. steam, 26 per cent. sail, Philadelphia 78 $\frac{3}{4}$ sail to 21 $\frac{1}{2}$ steam. Baltimore shipments were 84 per cent. sail and 16 per cent. steam. On this principle the average insurance from Montreal would be lower than from Philadelphia and Baltimore. The former's percentage of steam tonnage was 84 per cent. to 16 per cent. sail.

Montreal was formerly second to New York in the quantity of cereals exported. During the last decade Baltimore has taken that position, and Montreal comes third.

The only port that Montreal may be said to be competing against is New York. Its advantages to hold trade can be no better detailed than in the words contained in a report of the *Maritime Exchange*, of Philadelphia, a city that is endeavoring to obtain a share of the export grain trade:

"It must be borne in mind that New York, while herself possessing an enormous foreign and domestic trade, has, for a number of years, had a practical monopoly in the distribution of the exports and imports of many other States in the Union. This pre-eminence in the trade we all know to be largely due to her geographical position on the sea coast; to her important connection by the Erie Canal for the receipt of heavy tonnage from the great lakes; to her immense banking and monetary facilities, to her nearness to the large manufacturing interests in her own and adjacent States; and to her being the one point in this land in which foreign capital is always accumulated in large amounts.

Some idea of the immensity of the monetary facilities of New York may be obtained, when we consider that her corporate banking capital exceeds \$81,000,000, while the deposits amount to \$437,000,000. The power to influence any trade by such a concentration of money is almost beyond estimate.

These advantages have resulted in attracting to her harbour some thirty-nine lines of steamships, composed of about two hundred vessels regularly employed in the Transatlantic trade. In addition to this, there is loaded at her piers for foreign ports, an average of one transient steamer per day, or over three hundred per annum. This enormous foreign tonnage constantly moving, has developed a continuous demand for grain from the interior, and has given New York an advantage for outward business beyond all the other Atlantic ports combined. The large amount of outward freight room daily offering, causes, by its competition for business, a constant market for grain at the highest prices obtainable on the seaboard. As these steamer freights vary by competition, and the necessity of procuring cargoes to enable vessels to sail on their appointed days, additional fractions on the price of grain required for shipment are insisted upon and obtained by the sellers, and under this stimulus New York has generally been, for a series of years, the highest market for grain on the Atlantic seaboard."

The following statement shows the tonnage entered at the ports of New York and Montreal during the last twenty years, from which it may be perceived that

Montreal, during the last decade, as compared with the previous one, has not had as large a percentage of increase as New York.

Tonnage entered at New York and Montreal, during the years 1864 to 1883, inclusively.

Year.	At New York.	At Montreal.	Year.	At New York.	At Montreal.
1864	2,382,192	142,046	1874	5,049,618	400,675
1865	2,076,477	134,758	1875	4,421,074	375,052
1866	2,607,325	189,280	1876	4,467,139	299,711
1867	2,754,005	185,354	1877	4,672,300	288,003
1868	2,865,252	186,104	1878	5,545,026	309,261
1869	3,101,691	251,557	1879	6,661,826	349,712
1870	3,093,186	306,065	1880	7,611,282	427,057
1871	3,413,438	344,323	1881	7,506,522	494,028
1872	3,969,339	391,926	1882	7,360,843	373,413
1873	4,211,624	413,034	1883	6,448,837	405,496
Annual average..	3,056,353	253,445	Annual average..	5,974,447	373,141

The position that Montreal has occupied in the grain trade during the ten years ending 1882, can be seen in the following table of the percentages of receipts and exports of grain at five competing Atlantic ports.

Percentage of Grain Receipts and Exports at five competing Seaboard Ports, for the decade ending 1882.

Years.	Receipts.					Exports.				
	Montreal.	Boston.	New York.	Philadelphia.	Baltimore.	Montreal.	Boston.	New York.	Philadelphia.	Baltimore.
1873.....	11.4	10.3	52.8	14.3	11.2	19.60	2.45	62.10	5.50	10.35
1874.....	9.2	9.3	55.8	12.8	12.9	15.72	3.05	62.94	6.35	11.96
1875.....	9.6	10.2	52.3	15.7	12.2	17.03	4.42	56.12	9.80	12.63
1876.....	9.0	10.7	45.8	16.8	17.7	13.88	4.80	44.14	17.50	19.68
1877.....	9.0	11.3	50.3	12.5	16.8	13.55	4.79	50.10	10.82	20.74
1878.....	7.12	9.29	50.06	15.49	16.04	10.42	6.09	50.74	14.06	18.69
1879.....	6.74	9.86	49.06	14.25	20.09	8.77	6.29	49.75	12.93	22.26
1880.....	7.42	10.88	49.51	14.33	17.76	10.13	7.71	50.95	12.01	19.20
1881.....	7.26	13.41	52.39	10.69	16.25	10.05	9.39	52.80	8.99	18.77
1882.....	7.79	14.34	54.69	9.29	13.89	12.00	8.20	56.80	6.10	16.90
Average...	8.45	10.96	51.47	13.61	15.48	13.12	5.72	53.64	10.41	17.12

From the foregoing, it appears that the exports from Montreal, comparing 1873 and 1882, have decreased 7.60 per cent., that Boston's exports have increased 5.75 per cent. and Baltimore's 6.55 per cent.

Southern ports, as well as New York, appear to have a business that Montreal does not engage in; Baltimore especially, exports wheat and corn to some twenty ports in France, also ports in Spain, Portugal, Italy and Turkey,

Montreal's business is nearly all with Great Britain.

Of the total receipts at these ports, from an approximate average of several years, it appears that $77\frac{1}{2}$ per cent. is received by rail and $22\frac{1}{2}$ per cent. by canal. Of the latter, the receipts by the Lachine Canal were 5 per cent. and the Erie Canal $17\frac{1}{2}$ per cent. of the total receipts.

It is probable, when our enlarged canals are completed, the chief diversion of American grain would be from Buffalo and that export grain. A greater quantity might be diverted if international relations were such that western cereals could be stored in Montreal for distributions for the consumption of New England States, and return imports to be shipped West by water. The Grand Trunk now carries the greater proportion of its receipts of grain and corn at Sarnia and Georgian Bay ports through Montreal to Portland, and to the New England States by its railway connections. If Ogdensburg can do the business, with Boston and New England points, stated elsewhere, there is no reason why the large propellers, carrying some 2,000 tons, should not go down to Montreal, from which place there would be to the Northern New England States a less rail mileage than by any other route; the increased length of the water transport would be compensated for by decreased cost of transport by water and the lesser rail mileage. We would therefore have Montreal the foot of lake navigation for the supply of these States instead of Buffalo. The physical characteristics of the country show that the River St. Lawrence is the natural waterway to these States by a connecting link to Lake Champlain. The continuous range of mountains which divides the Atlantic States from the West is unbroken except by the Hudson, through which break run various railways as well as the Erie Canal. North there are the Adirondacs, a barrier to the New England States around the northern spur of which is the Lake Champlain Railroad and the St. Lawrence. There are, therefore, naturally tributary to railways running northward of the Adirondacs and the River St. Lawrence, nearly all of the New England States north of a line drawn from Albany to Boston. Montreal is destined in time to be a great grain market for this territory, not only of the cereals of the Western States but of the North-West of Canada, and of the coarser grains, oats, rye and barley—of Quebec and Eastern Ontario, whose natural consuming territory is these States.

The warehouses of Montreal might be filled during the season of navigation, as is done in Buffalo, to be exported by the St. Lawrence River, and during the winter by Boston and Portland, or forwarded by railways intersecting the Eastern States, for home consumption. The failure of the canals in the past to attract traffic and the small volume of trade which seeks the St. Lawrence route at present is by no means caused by the economic disadvantages of the route. Nature has made the River St. Lawrence the natural outlet of nearly all the wheat-producing territory of North America, and a large portion of the corn area. An artificial barrier has been erected in two political and commercial systems prevailing over the country, contiguous and tributary, which obstructs the avenues of nature and diverts into artificial

channels a large portion of the trade and commerce of the northern half of this continent.

At present there does not appear much hope of attracting any proportion of the shipments from Western ports to the River St. Lawrence. Money or capital and enterprise appear to be greater levers in attracting trade than little differences in cost of transportation or small taxes, such as canal tolls.

SPECULATIVE SYSTEM OF DEALING IN GRAIN.

Grain was, until a recent date, sold by sample in the principal seaboard markets. Every canal boat or carload of grain preserved its identity. What some call a legitimate business was done. The buyer only bought the grain he intended to have delivered to him, and the seller only sold what he intended to deliver. Grading grain has been adopted, within the last few years, in New York, Baltimore and other United States Atlantic ports. The change from sample to grading has rendered possible and introduced the western method of doing business the protective and speculative system of futures and options. Chicago was the first city to adopt this character of trading, it being the principal port to which grain was forwarded for shipment. As the railways multiplied and the receipts of grain became greater, it was found impossible to keep every consignment separate; trouble and difficulty arose, which resulted in the business men establishing different grades of grain on a recognized standard of inspection. Grain, on arriving, was inspected, graded and elevated into the warehouse and a receipt given for the number of bushels there might be. Business thus changed from sample to warehouse receipts.

Ocean telegraphy making synchroal the fluctuations of the buying markets of Europe and selling markets of America and other grain exporting countries; the increase in the number of steam vessels regularly plying between the two Continents; their larger carrying capacity cheapening the cost of transport; the quickness of communication, the steam vessel gradually forcing the sail from the grain trade; the extension of telegraphic facilities, railroads, improvements of water communications, erection of elevators, and cheaper methods of handling grain, increasing the competition of other surplus grain-producing countries with America; these, with other causes, tend to universalize prices and fluctuations of value and give a more speculative character to the grain trade.

The immense increase in railway mileage in the Western States reaching into every grain-producing district; the consolidation of railways under one management; the introduction of fast and through freight car lines; the great reduction in cost of transporting grain by rail from the grain-receiving centres to the seaboard; the diversion from the Erie Canal and waterways to the railways of the transport of a large proportion of the grain for eastern consumption, have all changed the character of the business at the various Atlantic ports.

The Western men were more alive to the spirit of modern commerce than the Eastern. The energy which enabled Chicago, after a fire and disorganization of business, in magnitude unknown in modern times, both to prevent the diversion of

trade and in a few years to more firmly establish her influence; that energy has infused into her methods of business a speculative element which has attracted the capital of the world, and enables her to govern and regulate the grain markets of America. The grain speculator is willing to assume the risk of predicting values for the future. He will hazard his money on his opinion, of Europe's probable deficiency and America's, or other grain exporting countries, surplus, from the time the seed is in the ground until the crop is harvested. He has relieved the farmer and producer from the local dealer or miller, and centered in one city the determination of values and the speculation which was formerly diffused over a wider area; and dependent upon local conditions and circumstances, which placed the producer in the power of those who established prices more upon the necessities, and inability to sell, of the farmer than the value of the commodity. This speculative business prevails in St. Louis, and in all the lake ports, influenced principally by Chicago quotations. In Duluth, Milwaukee, Toledo, Detroit, they deal in futures and options. Coming east, Buffalo, under the sample system, had considerable business, the identity of the grain being preserved in its warehouses. The grading of grain and dealing in futures and options have carried its business to speculative markets, and out of the immense receipts at that port it merely derives the profit the grain in transit leaves.

The first seaboard city to grade grain, and deal in futures and options, was Baltimore. From the date it became a speculative market its receipts and exports have increased largely, and it is now known through the west as a "live market." New York, finding that business was being diverted to Baltimore, that, to the detriment of her trade, the export merchant made his purchases in Chicago, because, on account of their being no speculation, he raised prices by the quantity he bought, introduced the system of grading grain, and dealing in futures and options. There was considerable opposition from the older members of the Produce Exchange, who wished to adhere to the tin boxes of samples of each boat load of grain which arrived. Speculative trading was first established on pork and lard, in 1876. The arrangement for the grading of grain was completed in 1877 and the call board established; since that time the receipts of grain have increased largely, as speculative dealing is impossible where there is not a large amount of grain in store. The exports have also increased proportionately.

The amount deposited in margins has increased from \$271,776, in 1876, to \$17,810,007, in 1883. The largest sum deposited in one day was \$623,200. The sales on call only represent a fraction of the business, as the private sales and purchases among members of the Exchange are not recorded. It is estimated that business is done at times to the value of \$10,000,000 per diem. Since 1877, the sales on call have increased from 32,878,000 bushels to 128,251,000 bushels, in 1883.

The following statement shows the volume and character of this speculative business since its adoption in New York:—

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*Statement of Sales on Call, and Margins deposited, at the New York Produce Exchange
from the date of the adoption of the system of dealing in futures and options.*

Years.	Wheat.	Corn.	Oats.	Pork.	Lard.	Oil.	Margins Deposited.
	bushels.	bushels.	bushels.	barrels.	tierces.	barrels.	\$ cts.
1876.....				104,250	149,750		271,776 00
1877.....	15,016,000	17,862,000		174,000	268,000	19,800	673,925 00
1878.....	15,280,000	17,261,000		65,500	194,550	6,000	726,007 00
1879.....	34,388,000	27,847,000		74,750	859,250	5,200	2,783,854 00
1880.....	46,080,000	25,160,000	4,725,000	50,750	440,200	900	6,052,360 00
1881.....	44,392,000	41,912,000	15,690,000	19,500	782,000		10,716,838 00
1882.....	47,376,000	48,164,000	27,370,000	15,750	1,737,600		17,120,887 50
1883.							
January.....	4,184,000	5,160,000	2,195,000	750	43,750		876,730 00
February.....	5,872,000	5,136,000	2,610,000		54,750		1,734,410 00
March.....	4,792,000	3,856,000	1,415,000		43,500		1,194,110 00
April.....	5,040,000	2,440,000	1,800,000	250	10,500		1,043,460 00
May.....	7,004,000	4,632,000	1,820,000		33,750		979,020 00
June.....	8,080,000	5,464,000	1,690,000		68,500		2,509,316 00
July.....	7,152,000	3,832,000	1,765,000		47,000		1,327,290 00
August.....	4,576,000	3,656,000	1,270,000		25,000		1,061,501 00
September.....	4,984,000	3,464,000	1,060,000		26,250		1,892,990 00
October.....	5,832,000	2,800,000	1,730,000		21,250		2,280,390 00
November.....	3,752,000	2,168,000	1,773,000		27,000		1,289,080 00
December.....	2,408,000	2,032,000	810,000		31,750		1,621,710 00
Total.....	63,676,000	44,640,000	19,935,000	1,000	433,000		17,810,007 00

The New York Produce Exchange, since the adoption of this system, has been compelled to erect a new building, at a cost of \$3,000,000. The membership is now 3,000, and the tickets of membership have increased from \$300 to \$2,500 each.

I have alluded to systems of business on account of the report and remarks made at the annual meeting of the Corn Exchange Association, Montreal, where great stress was placed upon the "incubus of canal tolls." As far as I can judge, Montreal is doing a legitimate business. It was stated at the meeting that the income from the tables, I suppose for samples, had dwindled away every year, and that the funds of the Association were decreasing from year to year, and something must be done; that the falling off in tonnage seeking Montreal was serious. The Allan line had established a weekly line to Boston, and a fortnightly line to Baltimore, instead of Montreal. Statistics were given showing great increase in exports from other ports, principally speculative markets, and decrease at Montreal.

The report of Trade and Commerce, city of Montreal, 1830 to 1882, states, under causes of a decrease in movement:—"The effect of corners in some of the grain markets of the Western States has been to paralyze legitimate business and obstruct the movement of breadstuffs towards the seaboard." Montreal's business is principally export, it is considered at other seaboard ports that corners do not affect the export trade. The "corners" generally being local, those interested can sell spot-grain for export at European market prices, without detriment to the corner. The principal corner affecting the export trade of New York was what is known as

the "Keene corner" of 1879 and 1880, where a number of capitalists thought there was a good opportunity of "cornering" Europe by buying up the surplus grain of America; but grain was imported into Great Britain from places with which trade was deemed impossible. The corner "burst," to the great loss of the makers. While it continued it seriously affected the shipping interest of New York, and is stated to have been a lasting injury, from opening up business in grain with countries hitherto unthought of. I find no other corners alluded to in the reports of seaboard exchanges which have obstructed the movement of breadstuffs to the seaboard by American routes.

A special committee of the New York Senate was appointed to investigate the cornering of grain and other articles. A number of witnesses were examined, among them an old member of the Produce Exchange opposed to innovations. He was asked what effect dealing in futures and options or speculative business had upon legitimate business. He answered. "It ruins it; I had a legitimate trade, and I won't do any other. Legitimate trade cannot live in competition with gambling." It may be that Montreal's business is in a similar position with reference to other competing ports as this member's of the Produce Exchange was with regard to the other members of the same body. As I understand it, the business of Montreal is similar to that of New York before 1877. There is no established system of grading grain, except, perhaps, that of Ontario. Nor is there any great quantity goes into storage to speculate upon. Montreal being weighted in having only one description of trade—the export—its storing capacity is only 2,000,000 bushels, while that of New York is 24,275,000 bushels. There being no speculative market to attract ocean tonnage, and the inward cargoes being confined to the imports for the supply of a limited population, Montreal can only do a grain business proportionate to the orders she may receive from Europe, the capital her business men may be willing to employ or risk, and proportionate to their speculative enterprise, governed chiefly by the tonnage seeking port, as receipts for export in excess of that tonnage, would so increase freight rates that business could not be done profitably.

Speculative dealing has extended to European markets. With the ocean cable the business is becoming similar to that between New York and Chicago. Commercial houses have agents or branches in each city, and buy or sell futures, according as the fluctuations in the respective markets render advisable. Liverpool, London and New York are becoming more intimately connected in the business. A merchant in the former cities can buy, at any minute, for immediate shipment, or allow it to remain in store, to ship to any market he finds most profitable, from the large stock of grain this speculative business has attracted to the latter port. The cargo would arrive in Liverpool in nearly the same time as the New York merchant would obtain grain from Chicago. New York acts as an intermediary market between Chicago, or the West, and Liverpool, a fact which is bound to attract grain to that port or any other port that does the same character of business. As speculative dealing in grain increases in Europe, the export business will be certain to gravitate to these ports.

In 1873, Thomas Rimmer, Esq., a grain merchant, of Montreal, was examined by the United States Senate Committee on transportation routes to the seaboard. He stated his firm was principally engaged in the export of American grain to Great Britain:—"We never get any consignments, and never have had from the West, and of the 12,000,000 bushels coming down here and exported to Europe, I believe the whole is paid for in cash, before it leave the American ports. A consignment business does not come here at all." He then said it was immaterial where they shipped from, whether New York or Boston, but preferred the St. Lawrence, chiefly because they were at home and could do their own business, and saved commissions and charges; that there was a margin in favor of Montreal by the inland freight of 5 to 8 cents, but there were cheaper ocean freights from New York.

It was stated that at that date one firm in Montreal exported annually three or four millions of bushels, principally wheat and corn. I am unaware of the number of merchants purchasing that amount; at present, four or five, would, at that rate, do the whole export business of 1883.

As Mr. Rimmer stated, the grain was purchased at western ports for cash and sold in Europe, the price of both purchase and sale being settled, the only indefinite character of the transaction, to the exporter, would be the freight rates. If he forwarded by the St. Lawrence too large a quantity for the ocean tonnage seeking Montreal, the ocean freights would rise, or, in the same manner, inland freight rates might be increased. The only restriction to exporting by the St. Lawrence route would be insufficient capital to purchase, or the purchase of so large a quantity as to increase transportation charges. New York and other American seaboard cities, at that time, did a business of the same character, Montreal being under no disadvantage, except, perhaps, the larger quantity of grain consigned to the former port. Since that date speculative trading has been adopted in all the American seaboard cities, while in Montreal the business maintains its same character.

As stated elsewhere, the Secretary of the Chicago Board of Trade remarks that western shippers prefer to ship to seaboard cities, to be determined, according to the market upon arrival, whether it shall be sold for home consumption or export. We have seen that in the past Montreal had not a consignment business; if she had, she would now be under still greater disadvantages since the advent of speculative trading. The western merchant, if consigning to New York, can telegraph his broker or representative to sell to arrive, and he will know exactly how he stands. If he consigned to Montreal, there being no market or sales for future delivery, prices might drop 5 or 10 cents per bushel by the date it arrived and the property sold. It is quite certain, therefore, that all western grain would seek a market where the shipper, knowing the amount the property cost him, could sell for future delivery at a price to protect himself against loss by fluctuation in prices during transit. The New York merchant, buying in the West, has the benefit of two markets, home and export, while the Montreal merchant has only one—he must export. The former merchant buying, say 100,000 bushels of wheat, can, at home, sell and buy futures amounting to 1,000,000 or more bushels, make a book, as it were, and settle all the

deals with the original purchase when it arrives. The export merchant in New York can either purchase spot grain, or for future delivery, at home or in western markets; the export merchant in Montreal has to purchase in the West, and when he has purchased, cannot, as the former, protect himself by a speculative trading at home.

New York merchants have found that this system of trading, since its adoption, has been greatly beneficial to the export business. Formerly they ran up prices by their purchases; now they can buy options and trade them off for actual property, without influencing the market.

European grain merchants also operate in the American speculative markets, which would have a tendency to make trade gravitate to those ports.

The character of the grain business having radically changed at United States Atlantic ports within the last ten years, if there are merchants in Montreal doing the amount of export business Mr. Rimmer stated, ten years ago, he was doing, they must be heavily weighted by the disadvantages Montreal presents, from the lack of the protective and speculative element which has attracted foreign capital and speculation and large quantities of Western grain to rival ports, enabling their competitors in these ports to underquote prices on foreign orders.

Apart from the general features of this system, it is applicable to numerous details of trade.

For milling purposes, in, say England, different grades and descriptions of wheat have relative differences in value. A miller, to meet the demands of his business, may require, a month hence, a quantity of wheat of a certain quality and will contract to receive it at a fixed price a quarter, above or below what the price will be at that time of some standard grade. To fill this order the Liverpool merchant cables to the Montreal merchant if he will deliver at Liverpool, a month hence, the wheat on these terms. The latter will require to telegraph to Chicago or some other western market and learn at what price he can purchase the wheat, which, with transportation and other charges, with his commission or profit added, will be the value of the property to him a month hence. If he fills the order, before the wheat arrives, prices of the speculative grade, upon which depends the amount he will receive for his purchase, may fall and he may lose heavily.

On the other hand, a merchant in Baltimore or New York, after learning at what price he can purchase the description of wheat required, goes on Change, and if he finds he can sell an option for future delivery of the same number of bushels of the speculative grade at a price sufficiently, within the relative difference offered, to make his commission, he closes the transaction and is protected from fluctuations in value between the date of purchase and the date the property arrives. The grade of wheat determining the price may fall in the meantime, and he may receive less than the property cost him, but he meets no loss, as he is compensated, either by being able to fill his contract for future delivery at a profit, or the purchaser of the option pays over the difference between its cost and the market price at the date of delivery.

Having only a theoretical knowledge of the subject, my deductions and illustrations may, to a certain extent, be inapplicable, which a man practically conversant

with the business could detect; but I feel convinced that the general statement is correct; that this speculative trade has had a greater effect in increasing the export grain trade of New York, Baltimore and other ports, and preventing an increase of exports by the St. Lawrence route, than the insignificant toll upon the canals, which the New York Produce Exchange stated before the Free Canal Committee of the New York Senate, were practically free.

This description of business has established a strong foothold in the United States; it permeates the whole department, of trade. In one of the Produce Exchanges which I visited, I found the "call" in brisk operation of futures and options in eggs, butter, poultry, &c.

What may be the moral and social effects of speculative business futures or otherwise, may be left to the moralist. The opinion of its advantages and disadvantages depends upon the temperament and character of the man by whom the judgment is formed. Its effect upon national development is, likewise, dependent upon the temperament and character of the nation. Certain it is, that without the traits of character, the spirit of enterprise and investment in the future, to which this system is necessarily concomitant, the Western States would not have advanced so rapidly, nor become the prosperous people they now are; nor would the United States have become the greatest nation in the world.

M. G. Mullhall, F.S.S., an English economic writer, in a work entitled, "Progress of the World," states:—

"American industry and population increase much faster than in Europe, and so does the wealth of the nation. Every day that the sun rises upon the American people it sees an addition of £500,000 sterling to the accumulated wealth of the Republic, which is equal to one-third the accumulation of mankind."

"The accumulation of wealth in all countries may be estimated as follows:

United States	£165,000,000
France	75,000,000
Great Britain	65,000,000
Germany	40,000,000
All other countries.....	145,000,000

The increase of wealth (United States) since 1850, would suffice to buy up the whole German Empire, with its farms, cities, banks, shipping, manufactures, &c."

He states the income per inhabitant to be in Great Britain, £33; United States, £33; France, £25; Germany, £17. The percentage of taxes to income is: United States, 10 per cent.; Great Britain, 12½ per cent.; Germany, 15 per cent.; France, 16 per cent. The percentage of debt to capital is: Germany, 5 per cent.; United States, 8 per cent.; Great Britain 10 per cent.; France, 14½ per cent.

Legislative action may abolish canal tolls, but it cannot prevent New York, Baltimore and other cities from speculating in futures and options, to the detriment of Montreal's grain trade.

Wherever this speculation exists, trade follows. As an illustration, we will suppose, international impediments laid aside, that a legitimate business is established at Port Arthur, Montreal doing a legitimate business, with the speculative market that now exists at Duluth and New York in competition; if freight rates to each port were in any way similar, the grain of the North-West, or the principal portion of it, would seek Duluth and New York, or some other speculative market.

RAILWAYS VERSUS WATERWAYS.

The prominence, railways have assumed in transportation, has temporarily eclipsed the waterways. The great diversion from them of transport on both lake, river and canal, has led to the question whether waterways are to be completely supplanted by railways.

When several companies controlled different sections of the present eastern trunk lines, as the New York Central, which is comprised of the roads of a number of companies originally, through transport was expensive and confined to easily handled freight. By the combination of different sections of road under one management or control, from the seaboard to the West, especially Chicago, the great railway centre of the Western States, also by the extension of western railways from this centre through the grain-producing sections of the West, thousands of miles being under one company and management, resulted in centralizing the freight collected by numerous feeders in Chicago. The eastern trunk lines made it their objective point.

The introduction of fast and through freight lines of cars, first owned and controlled by private companies, with the officials of railways generally interested, with definite rates paid for hauling the cars, according to mileage run, over the lines of different railway companies, facilitated and cheapened the carrying of through freight, transshipment from the cars of one railway company to another becoming unnecessary. These car companies were enabled to make freight contracts embracing the carriage over numerous different railways, their agents acting as solicitors of freight through the Western States, while the waterways were dependent upon that which arrived for storage at the different lake ports. The private lines being found to be a losing business by the railroads, the rate they received for hauling the cars, allowing a large profit to the private companies, they introduced what is called co-operative freight lines, owned or controlled by railway companies or their officials and under a separate management or organization. These lines have generally a distinctive name and color. They are hauled over a large part of the railway system of the continent and carry agricultural products from the producing point to that of consumption, or to Atlantic ports for shipment.

The waterways being closed some months in the year, place the producer and consumer in the power of the railways companies, who, during that portion of the year, can raise the freight rates on all products that are unable to await the opening of navigation, to the utmost these products will stand. In this way numerous articles which could be, with equal facility and less cost, transported by water, have gone to

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the railways, as those compelled to send freight by rail find it more advantageous to make contracts covering the year, on the condition that the railways have the carrying during the season of navigation.

At such points as between Chicago and other lake ports, and Buffalo, the railway companies found it to their interest to own and control steamer lines. As has been shown previously, they have vessels of some 93,000 tons carrying capacity, plying between these ports. These gigantic corporations have come under the control of a few individuals, by methods which, in the ordinary transactions of life, would receive a hard name. Their roads, as in Belgium, France, Germany, where railways are either under, or partially under, the control of the State, are not operated on an equivalent for capital expended and expense of operation, but for the advantage and interest, and the aggregation of capital in the hands, of a few individuals, by the spoliation of a large number of legitimate investors. Railways, upon this continent, cannot be compared with waterways by any of the axioms of political economy which govern the relations of capital and labor, in reference to the absolute economy of transport.

Steamers on the lakes are generally owned by individuals or companies, who have placed a certain amount of capital in a legitimate investment, expecting a fair return for that capital. It is said to be a peculiarity of railway wars and reduction of freight rates, that they often occur during the season of navigation. The last great war it is said, cost the railways many millions of dollars, which loss is borne by the bondholders of the road, the original stock being generally valueless, and is distributed amongst a large number of individuals. When the lake marine has either to lay up or carry at a loss through the periodic disruption of the rates agreed to by the trunk lines, the loss falls upon the owner of a steamer or steamers, who has invested the chief part of his capital, perhaps, expecting only a legitimate return. His business is disorganized, and by successive repetitions of these wars, the shipping interest becomes paralyzed, as in 1881.

It is said that the southern trunk lines, whose business is not so much affected by the northern water routes, find that while unpaying freight rates may be to the advantage of the roads running contiguous to the lakes in depressing the marine interest, they do not reap a proportionate benefit. Besides these questions, the actual cost of transport has been decreased since the steel rail has been used upon railways, as the statistics of the freight rates per ton mile show.

The introduction of heavier freight engines, increased loading of cars and numerous details in railway management, have actually cheapened transport. But this decrease does not alone apply to railways. There has been as marked a reduction in the cost of transport by the lakes, from the increased size of propellers, improvements in machinery and equipment, which have led to complete changes in lake transport.

In comparing canal with railway transport, the former may be divided into three classes:—

First.—The purely artificial waterway, consisting of the formation of a canal, for a great length, of small sectional area, and for which the water supply is an important consideration.

Second.—There is the canalized river, or river rendered navigable by canals and dams, short reaches of canal and locks, forming a slack-water navigation connected by canals.

Third.—We have ship canals of large capacity, and abundant supply of water of short length, either connecting seas, lakes, or reaches of a great river.

In any comparison with canals, the effect of railways upon each description should be taken into account.

Of the first description, the canals in Great Britain are an instance. There are over 2,500 miles of canals, of limited supply of water and restricted capacity. It was found necessary, in Great Britain, by the railway companies, to prevent competition of the canals in through traffic, to buy up connecting links in the different systems, even with what we would call ditches, and with the railways controlling many of them, a large traffic in heavy and bulky articles is done. Of the same class, there are, in the United States, some 2,500 miles, with a depth of from 4 to 7 feet of water. On their traffic the railways have made inroads.

It is asserted by some, although, except for the heavier and less valuable articles of transport, their day is past, they have paid and still pay, many times over, the cost of construction and operation in the indirect saving to the countries they traverse, by freeing them from railway monopolies. Even where little business is done, they cause a great reduction in freight rates. I was informed by the Secretary of the Board of Trade in Chicago that where the railway running parallel to the Illinois and Michigan canal came into competition with the canal, it reduced its rates one-half, and a short distance from the diverging point that they were doubled.

The most important of the artificial canals of considerable length, is the Erie. It has outlived the rest in usefulness.

In the second group of canals or canalized rivers. We have the improvements made by the Federal Government in the Illinois River, by the construction of locks and dams, thereby completing navigation from Chicago to the Mississippi. There is also, on the Fox and Wisconsin River, improvements, dams and locks, now under construction, and forming a navigable waterway through Wisconsin, from Green Bay, on Lake Michigan, to the Mississippi, a distance of 270 miles. In Canada the Rideau Canal comes under this class, as well as the Trent, the Ottawa Navigation, and the Richelieu Navigation, to Lake Champlain. These canals have a plentiful supply of water, and the short mileage of canal, as compared with the long reaches of navigable water, render them a cheap route for transport, with which railways can never compete for the carriage of certain products. These will always retain their importance, not only on account of the immense saving or indirect advantages of competing routes to the railways, but also for the transport of those articles which the railways cannot so economically carry.

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Heavy articles increase as the country augments in population. As towns and cities spring up, coal, sand, plaster, lumber, ores, salt, stone, brick and numerous other bulky articles will be required.

In the third class, we have the canals connecting large bodies of water, such as the Suez Canal, the Panama Canal, now in course of construction, and various other ship canals in different parts of the world. To this class belong the St. Mary's and the Welland Canals, as well as those of the St. Lawrence River. It is obvious that any comparison of canals of this description with such as the Erie, and other canals of that class, is erroneous. Although, the construction of the Erie Canal marks an important epoch in the history of the United States, that no work in the world has a greater historic importance, it being the great medium of opening up and settling the Western States, in building up the country it traverses and New York city, still its importance, in a structural and engineering sense, is in no way commensurate. There is no doubt that the railways have and will divert a great proportion of the traffic of small canals, except heavy, bulky and cheap articles.

For railroads to supersede the St. Mary's, Welland and St. Lawrence Canals, they must supercede all natural waterways, supplant the lake marine of the United States, and coastwise steamers plying between ocean ports, leaving no traffic for the vessels except across the ocean or between points where it is impossible to construct a railway.

In France the inland waterways have attained a degree of prominence unapproached in other countries. According to the report of W. Watson, Esq., Ph. D., Honorary Commissioner of the United States, at the Vienna Exhibition, 1873 (later statistics are at present unavailable), the waterways are about 7,000 miles in length, consisting of about 3,000 miles of canals, 2,000 miles of canalized rivers, and 2,000 miles of uncanalized rivers: In 1875 there were carried by water transport, 1,748,500,000 tons of freight, besides a large quantity of wood.

The canals of England are estimated to carry annually some 23,000,000 tons of freight, and are in length some 2,500 miles.

The United States canals, according to the fourth volume of the Census of the United States, 1880, are some 2,500 miles in length, and carried, in that year 21,044,292 tons.

The canals of Canada have the least percentage of canal navigation, in comparison with the water-ways rendered navigable, of any other country. Their combined length is only some 113 miles (exclusive of the Trent Navigation and St. Peter's Canal.) The number of tons of freight carried in 1883 (fiscal year) was 2,667,570 tons.

In France, there was expended, up to 1873, \$157,000,000 on canals, and \$33,000,000 on inland waterways, or, in all, some \$240,000,000. In the United States the cost of the construction of the canals now operated was \$170,000,000.

In Canada, the total expenditure upon canals, including that of the Imperial Government, is some \$15,000,000. This amount may be compared with that expended by the various States of the United States. New York State has expended

\$62,000,000; Pennsylvania, \$34,000,000; Ohio, \$15,000,000; Illinois, \$6,500,000. This expenditure does not include abandoned canals, of which, in addition to 2,500 miles now operated, they were in length 1,954 miles, and cost \$44,013,166, of which New York State expended \$10,240,000; Pennsylvania, \$12,750,000; Ohio, \$3,250,000; and Indiana, \$7,723,000;—(round numbers, and includes expenditure by private corporations).

The greater proportion of the United States canals was built before the era of railways. They were purely artificial, of small sectional area, for local traffic and short distances. As the country settled, the water supply of many became deficient; the sectional area was decreased by sediments and deposits, forming a very imperfect navigation, which the construction of railways superseded for transportation, leading to the abandonment of some, and the maintenance of others chiefly as regulators of freight charges by the railways. Of the 2,500 miles now in operation, with a very short mileage excepted, they are of limited capacity, with a depth of from 5 to 7 feet, and many with difficulty supplied with water. Reference is made to the American canals on account of comparative statistics of their traffic forming the stock argument, both when the decrease in traffic upon our own canals is discussed, and when opponents to their completion attempt to present any facts in support of their assertions.

Taking our different systems, it is obvious how erroneous the comparison is with artificial canals, when the great extent of navigable water opened up by a short canal mileage is considered.

Richelieu River and Lake Champlain Navigation.

Sorel to Whitehall, distance 192 miles; canal navigation, $12\frac{1}{2}$ miles.

Ottawa Navigation.

Lachine to Ottawa, distance 112 miles; canal navigation, 7 miles.

Rideau Navigation.

Ottawa to Kingston, distance $126\frac{1}{2}$ miles; canal navigation, $16\frac{1}{2}$ miles.

St. Lawrence Navigation (River).

Quebec to Presqu'Isle Harbor (Murray Canal) distance, 411 miles; canal navigation, 50 miles.

St. Lawrence Navigation (Lake).

Presqu'Isle Harbor to Port Arthur, distance, 1,000 miles; canal navigation, 28 miles.

We thus have, by lake and river, an inland navigation of some 1,850 miles, opened up by the construction of 113 miles of canal.

The limited success of the canals is not a question of economic transportation, but purely political and commercial. They have been in advance of the population and productions of the country.

Leaving in abeyance the smaller system of water-ways, the absurdity is apparent of comparing the great lakes, the enlarged Welland Canal, the River St.

Lawrence and its enlarged canals, with the Erie Canal, and endeavoring, by quoting a mass of statistics relative to it and the railways running parallel, to prove the superiority and economy of railways over waterways as a means of transport for that class of products now water-borne on the great lakes.

In the comparison of the two methods of transport, take the propeller and her tow, previously cited. On the New York Central Railway, in 1881, the average amount of freight carried per train was 218 tons. On this basis, it would take thirty-four trains of eighteen cars, or 612 cars and thirty-four engines, to transport the cargo moved by one propeller and three consorts; or, take a propeller alone, of the capacity of the Welland Canal, enlarged to 14 feet depth of water, it would take eight trains, or eight engines and 140 cars, to transport its cargo.

The only correct judgment that can be formed of the capabilities of the St. Lawrence route is to be made from the statistics of the United States marine, which is nearly as valuable as the Canadian marine—ocean and inland.

In 1816 the first steamboat was built upon the lakes. Between that time and 1841 there had been 72 built of an aggregate tonnage of 17,000 tons. In the latter year the introduction of the propeller was the initial step in cheap water transportation. It has now totally supplanted the side-wheel steamer, and is rapidly doing away with sailing vessels, or causing them to be converted into barges or consorts.

For navigating the original Welland Canal, the first propeller upon the lake was built at Oswego in 1841—the "Vandalia"—of 128 tons register. Among the first propellers built above the Welland Canal was the "Hercules," at Buffalo, in 1843. In 1844 there were five below the Welland Canal, at Oswego, of an average registered tonnage of 146·4 tons; and above the Welland Canal, on Lakes Erie and Michigan, there had been built, in 1844, five propellers of an approximate average tonnage of 283·4 tons.

Table shows the Number of Freight Propellers, with their aggregate and average Tonnage, in 1841, 1844, 1850, 1860 and 1880.

Years.	Number.	Aggregate Tonnage.	Average Tonnage.
1841	1	128	128
1844	10	2,149	215
1850	50	16,427	328½
1860	197	67,073	340½
1880	202	139,154	689

Since 1880, as elsewhere shown, the number and capacity of freight steamers have been increasing. Of these it will be interesting to note the following statistics:—

Statement of the Number, Tonnage, Value, Men employed and Earnings for services, tons of Freight, Fuel, &c., of Freight Steamers upon the Northern Lakes, under U.S. register for the year 1880. Compiled from Vol. IV., U.S. Census.

Number.	Tonnage.	Value.	Men Employed.	Gross Earnings.	Paid for Services.	Tons of Freight.	Coal Burned.
		\$		\$	\$		Tons.
202	139,154.16	7,694,300	3,793	6,173,597	1,489,678	3,166,313	220,836

The statistics given in the above table refer to freight steamers only. In the following table all classes of steam vessels on the Northern Lakes are included:—

Number.	Tonnage.	Value.	Men Employed.	Gross Earnings.	Paid for Services.	Tons of Freight.	Coal Burned.
		\$		\$	\$		Tons.
947	222,290.45	13,918,925	9,143	12,136,228	3,293,964	4,368,171	488,610

The following table, also from Vol. IV., U.S. Census, shows at that date the best results of compound engines and propellers. These propellers, known under the name as below, or Anchor Line, are owned by the Pennsylvania Railway Company and run in connection with that road:—

Statement of Erie and Western Transportation Company's Buffalo and Chicago Line, showing Steamers, Carrying Capacity, Trips made, Miles run, &c., 1881.

Names of Steamers.	Registered Tonnage.	Actual Carrying Capacity in Tons of 2,000 lbs.	Style of Engine.	Trips made.	Average Tons of Coal per Trip.	Total Miles run.	Average Pounds of Coal consumed per hour.	Speed per hour in Geographical Miles.
Arizona	924	1,000	Compound..	13	104	26,765	853	9.02
Lehigh	1,705	2,400	do ...	12	117	21,498	1,034	10.06
Clarion	1,712	2,425	do ...	4	128	6,670	1,097	9.66
Philadelphia	1,464	1,550	Condensing	14	153	25,138	1,527	9.52
Alaska	1,288	1,575	Compound...	13	103	24,638	967	9.82
Lycoming	1,610	1,950	do ...	15	116	27,128	1,037	9.39
Conemaugh	1,610	1,875	do ...	12½	118	22,704	983	8.72
Delaware	1,732	2,100	do ...	13½	125	24,236	1,066	8.94
Conestoga	1,726	2,675	do ...	13	139	24,069	1,160	8.66
Juniata	1,709	2,000	do ...	13½	127	24,765	1,161	9.31
Wissahickon	1,620	2,025	do ...	14½	117	27,794	1,052	9.33
Gordon Campbell	896	1,275	do ...	11	119	20,164	928	8.36
Annie Young	1,607	1,025	Syphon condensing....	12½	114	22,433	1,008	8.77

In 1883 the enrolled tonnage of the United States vessels upon the northern lakes was :—

	No.	Aggregate Tonnage.	Average Tonnage.
Sailing vessels	1,373	310454.15	226
Steam "	1,149	304649.82	265
Total steam and sail	2,522	615103.97	491

If we take an approximate estimate of \$60 per ton steam, and \$25 per ton sail, for valuations, the value of steam tonnage, in 1883, would be \$18,278,509, and the sail 7,761,354, or a total value of United States marine, exclusive of canal boats and barges upon the northern lakes, of some \$26,000,000.

The enrolled registered tonnage of steam and sailing vessels in the Province of Ontario, 1883, includes tugs and barges on the Ottawa River, and barges at Kingston. The following is an approximate estimate of sail and steam tonnage, deducting the above and including the Canadian Pacific Railway steamers. We use the following figures, not as statistics of tonnage, but for the determination of comparative values :—

	No.	Aggregate Tonnage.	Average Tonnage.
Sailing vessels	462	44,000	97
Steam "	352	64,000	182
Total steam and sail	804	108,000	279

Assuming for these vessels a similar value as above, which would be high, as the steam tonnage is not as valuable as the American, with the exception of a few propellers recently built and the Canadian Pacific Railway steamers, we have the following estimate of the value of sailing vessels, \$1,100,000; value of steam vessels, \$3,840,000, or a total value of lake marine of, say \$5,000,000, which is probably considerably higher than the actual value.

TRANSPORTATION OF SURPLUS PRODUCTS OF THE NORTH-WEST.

That the only route, for the cheap transportation of cereals, from the North-West is by the lakes and St. Lawrence River, is evident. Claims are advanced with regard to the Hudson Bay route on account of shorter mileage, as the solution of the problem of cheap transportation of heavy products from that country.

The disadvantages Montreal has been under, and is still, from its five months' closing of navigation, is well known—higher rates of insurance, and higher freight rates, until recently. Many of these disadvantages can be remedied, which would be impossible with regard to the Hudson Bay route.

From the evidence adduced before a Select Committee of the House of Commons, it would appear doubtful if there were three months of navigation into Hudson Bay. For navigating, it would require the construction of a special class of steamers, which, when plying upon other routes during the time navigation was closed, would not be

able to transport as economically as steamers constructed for navigating southern latitudes. It is certain that the disadvantages of Hudson Bay, with its three months' navigation, to the Gulf of St. Lawrence, would be much greater than the latter in comparison with southern Atlantic ports. There appears to be no harbor upon the Bay except at Churchill; its distance from Liverpool is practically the same as Montreal. It may be confidently asserted, that for all time, freight rates with steamers especially constructed and engaged in the trade, would be 50 per cent. higher than from Montreal to Liverpool. Taking the other end of the route, the railway from Winnipeg to Churchill, the distance is unknown, but judging from the length of road from Winnipeg to Port Arthur, it might be taken at 700 miles, against 430 miles to the latter. From Winnipeg to Port Arthur is a part of a great trans-continental line, the year round; for seven months it is the head of an inland navigation, the vessels on which will transport as large a cargo as, perhaps, the size of vessels adapted to navigate Hudson Bay will admit of. The Hudson Bay road has no outlet to the ocean, except for, at most, three months, and will require to depend upon its local traffic for the other nine. It therefore may be asserted that the freight rates per ton mile, will be, on that road, 50 per cent. higher than from Winnipeg to Port Arthur. But allow the same rates, for comparison of placing a ton of wheat in Liverpool by each route.

Winnipeg to Port Churchill, 700 miles, say 1c. per ton mile.....	\$ 7 00
Port Churchill to Liverpool, at \$4 per ton.....	4 00
Total transport, ton of wheat, Winnipeg to Liverpool.....	<u>\$11 00</u>
Winnipeg to Port Arthur, 430 miles, 1c. per ton mile.....	\$ 4 30
Port Arthur to Montreal (enlarged canals).....	1 70
Montreal to Liverpool, at \$4.....	4 00
	<u>\$10 00</u>

If wheat is transported from Winnipeg to Liverpool for \$10 per ton *vid* Montreal, it will be certain to cost \$20 *vid* Hudson Bay. While the time of transit would be a few days less, it could never compensate for the greater charges, shorter season of navigation, and with disorganization of business for nine months.

For the transport of cereals of the North-West we, therefore, have three routes: Port Arthur to Buffalo, and by rail or Erie Canal, to New York; Port Arthur to Montreal, by lakes and canals; Port Arthur to ports on Georgian Bay and rail to Montreal and Port Arthur to Montreal, all rail. The approximate distance would be:

	Miles.
Port Arthur to New York via Buffalo and Erie Canal.....	1,370
“ “ “ Montreal, lakes and canals.....	1,250
“ “ “ “ lakes and rail, C.P.R. route.....	980

The advantages possessed by Buffalo is the larger vessel, if the Welland Canal is not deepened.

With regard to the competition of the lake and rail route to the canals, it is precisely similar to the transport between Chicago and Buffalo. The railway companies find it cheaper to transport by their own steamers, 900 miles by water, than 540 miles by rail. Other vessels transport this greater distance at one-third the rates of rail. We have, on the Georgian Bay lake and rail route, 455 miles of rail to 725 miles of water transport, nearly the same percentage of rail to water as between Chicago and Buffalo. We may make an estimate of transporting a ton of wheat :

All-Water.

Port Arthur to Montreal, 1,250 miles, at 1.36 mills per mile	\$1 70
Lake insurance, say.	0 30
Total cost.....	<u>\$2 00</u>

Lake and Rail.

Port Arthur to Owen Sound, lake, say 525 miles, at 1.36 mills per ton mile....	\$0 71½
Lake insurance.....	0 15
Elevating and transferring, Owen Sound, ½c. per bushel.....	0 16½
Owen Sound to Montreal, 455 miles, at 6 mills per ton mile.....	\$2 73
Total cost.....	<u>\$3 76</u>

All-Rail.

Port Arthur to Montreal (all rail), say 1,000 miles, at 5 mills per ton mile....	\$5 00
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For lake and rail it will be observed that a low rail rate is taken, based upon the pool rates from Chicago to New York, of 30 cents per 100 lbs., although less than half the distance. It is probable 1 cent per ton mile would be a fair rate. By all-rail a rate of 25 cents per 100 lbs, between the same points, which the Canadian Pacific Railway would find an unpaying rate, until the traffic became as great as upon the through lines between Chicago and New York. We have, therefore, wheat laid down in Montreal by water at, say, 6½ cents per bushel ; by lake and rail, at 11½ cents ; by all-rail, 15 cents, or 4½ and 8½ cents in favor of the water-way. There are two advantages in addition in its favor : the lake vessels pay the shortage ; by rail the quantity is not guaranteed ; also, the terminal charges are less for grain afloat.

It is obvious that grain from the west will, therefore, on the completion of the enlarged system of canals, take the water-route if the Canadian Pacific does not discriminate, in favor of the lake and rail route, in rail rates from Port Arthur westward ; that is, if the grain transported to Port Arthur is delivered to the all-water propellers at the same rate per ton mile as charged in the pro-rating of the through rate, to propellers running in connection with the east and west sections of the Canadian Pacific Railway system.

The chief outlook for Montreal appears to be the development of the North-West and the control of shipments of its surplus products.

It is estimated in the United States' North-West, that the cost of raising wheat is \$10 per acre, and a good average 16 bushels to the acre, which would be, say, a value of \$20 per ton to the producer. It is believed that from the competition of other wheat-growing countries, with cheap labor, such as India, which is yearly exporting to Great Britain a larger quantity—and in the latter country there cannot be a succession of bad harvests—for these and other reasons, prices in the future will not be as remunerative as they have been. Assume \$37.50 per ton as an average price for wheat in Montreal. The cost of transportation by rail in the North-West will probably, for some years, be not less than from $\frac{3}{4}$ to 1 cent per ton mile, if grain should be carried, as previously estimated, from Port Arthur to Montreal for, say, \$1.70 per ton, which would leave \$15.80 per ton for railway transport, to a point where wheat would merely pay the cost of producing. By this approximate calculation, at a distance of 1,580 miles westward of Port Arthur, the charges for transport would render unprofitable wheat production for shipment to the Atlantic seaboard.

Another capability of the enlarged canal system, the advantages of which the future will evolve, is the conversion of the great lakes, the River and Gulf of St. Lawrence, into one vast inland navigation, from Thunder Cape to Capes Ray and North.

An idea which prevailed with the projectors of the St. Lawrence Canals, and favored by those interested in the marine of the American lake ports, was to ship the products of the West directly to Europe in one bottom, and return importations in the same manner, without transshipment. The increased facilities and reduced cost of transferring cargoes, the constantly augmented carrying capacity and dimensions of the ocean vessel reducing cost of importation soon demonstrated its infeasibility.

In 1849, it is stated, a vessel from Cleveland sailed down the lakes and around Cape Horn to California. In 1855 an American vessel, the "Dean Richmond," crossed the Atlantic; in 1856, an English vessel, "The Madeira Pot," arrived at Chicago.

These events are noted merely as the incidents of an exploded theory. With regard to the lake vessel navigating the Gulf of St. Lawrence and economically engaging in transportation between the Lower Provinces and lake ports, conclusions may be advanced, the correctness of which the future may confirm.

One great disadvantage the lake marine labors under is the loss of interest and detriment of property through the closing of navigation for nearly five months of the year. There does not appear any reason why the properly constructed and designed lake vessel should not be adapted to engage in the carrying trade during the winter, say between the West India Islands and Halifax, or Portland. Take, as an instance, the Canadian Pacific steamers on the Upper Lakes. They have crossed the Atlantic in the autumn. If they had been constructed a few feet less in length, they would be able to steam down the lakes and through the enlarged canals nearly fully loaded

before the closing of navigation, and engage in any ocean coastwise traffic during the winter, where there is business to be done.

To return to transportation between the Gulf of St. Lawrence and the Upper Lakes, we will take the present American lake propeller with iron and steel hulls, or iron frames with oak planking, as now employed in coal, ore and grain transportation, or a modified type of the Canadian Pacific steamer, where carrying capacity does not require to be subjected to speed and passenger accommodation. These propellers withstand the gales and seas of Lakes Huron and Superior in the autumn, and would be equally safe in the Gulf of St. Lawrence.

This class of vessel would load down to 16 feet upon the lakes and from Montreal eastward (lighting to 14 feet through the canals) and carrying fully 2,000 tons of cargo.

From St Johns, Nfld., to Port Arthur is some 2,500 miles. We therefore have a navigation of that extent, with only 72 miles of canal navigation. The longer the voyage the cheaper the transport, pre-supposing that there will be products to be moved, there will, in the future, be not alone a lake navigation but an inland navigation extending between the Eastern and Western Provinces. From Buffalo to Chicago, and *vice versa*, vessels engaged in transporting coal and grain a distance of 900 miles, receive about 1 mill per ton mile for freight. Vessels engaged in transporting ore from Escanaba to Cleveland where they have frequently no cargo in return, obtain about 2 mills per ton mile for 550 miles. It therefore may be safely concluded that propellers could transport freight from the Gulf to the lakes, a distance of from 1,000 to 2,500 miles, for 1 mill per ton mile. Taking, for example, several ports in the Maritime Provinces—Shediac, Charlottetown, Pugwash, Pictou and Sydney—grouping these, a distance of 1,200 miles from Toronto embraces all, and sufficiently approximate for calculating cost of transport.

These ports can ship the products of the principal coal mines in Nova Scotia, also free, or sandstones of all descriptions, red granite, grindstones, plaster or gypsum and products of fish.

Take coal, at \$2 per ton on the vessel with freight at 1 mill per ton mile, or \$1.20 to Toronto, it would be laid down in that city for \$3.20 per ton, to which should be added the canal toll. The same rate will apply to any other bulky articles, the freight rates of return cargoes depending on the class of products shipped.

The Lower Provinces require a great quantity of salt; the English and other salt being carried as ballast, is sold at cheap rates. During the sitting of a Select Committee upon Interprovincial Trade, in 1883, the member of that Committee interested in the success of the salt industries upon Lake Huron, enquired of various gentlemen giving evidence if it were possible to introduce the western salt into the markets of the Lower Provinces. He stated one of the salt manufacturers had reduced the price of salt, and was making efforts to compete with English salt.

The distance from Goderich to the ports previously mentioned is about 1,600 miles. With the rate of freight previously taken, and including canal tolls, it could

be transported for \$1.80 per ton. It was said to cost \$2.50 per ton at the salt wells. Taking \$3 delivered to the vessel, the salt could be supplied to the consumer at a cost of \$4.30 per ton, and coal or other products returned.

The Maritime Provinces require various grades and descriptions of flour for the fishermen and those engaged in their industries. With the enlarged canal system, if they possess sufficient enterprise, they would manufacture flour as suited to their wants, both for themselves and Newfoundland. Although they have not extensive water-power, coal is sufficiently cheap to compensate, and enable them to enjoy the profits of their own milling.

Propellers could ship wheat at Port Arthur and Chicago, according to the kind of wheat required, and lay it down at a milling centre, a distance of 2,100 miles, at 7 cents per bushel, and return a cargo of their products at \$2.30 per ton freight.

Those conversant with matters of trade, and with sufficient foresight to discern to what extent Interprovincial Trade may be developed in the future, are better able to form an opinion upon this subject than a theorist.

The rates of freight predicated may seem low, and are not theoretical, but are founded upon the recorded freight rates upon the upper lakes. Their applicability to this route can only be disputed on the ground of a certain extent of canal navigation, the small percentage of which, in comparison with the great length of free and open water, should not render the comparison inapplicable.

The superiority of water over rail transport for heavy products is illustrated on this route, where there is, perhaps, the lowest rail rates in the world. The Intercolonial Railway has no interest to pay to bond or stockholders; it is operated for the general benefit of the country, and only with the expectancy of balancing the actual expenditure with the receipts. In addition to this, they load the coal upon the Grand Trunk cars, which would otherwise return empty, so that the cost of transport is merely the difference between hauling empty cars and loaded.

The rate for coal is 3 mills per ton mile, or treble what propellers upon the the upper lakes are carrying for, and at equal speed.

In concluding the subject of railways versus water-ways, the difficulties under which the latter labor may be cited. The absolute economy of transport is undoubted, but from many causes it is rendered inoperative. Taking, first, our smaller system of water-ways and transportation on short distances, one difficulty is terminal facilities. These are provided by railways. Every convenience for shipment and distribution is provided. Take, for instance, the shipment of phosphate from Buckingham to Montreal; nearly the total quantity is shipped by rail. For what reason? The railway company provides sidings, builds bins and gives every facility for shipment. Upon the Ottawa River there may be only a delapidated wharf or no wharf at all, rendering the loading of the barge expensive and inconvenient. On the other hand, if a wharf was provided with trestles, pockets, and shutes, where cars, if a railway or tramway were built, would run up and dump their load; the barge could come alongside and have her cargo delivered to her, from the shutes, in an hour, at

comparatively no expense. The transport to Montreal by water would be much less than by any railway, if operated upon economic principles.

In other cases the same difficulty may occur at the point of discharge, the superior facilities of the railways militating against the cheapness of transport by water.

Another instance under our immediate observation—the shipment of lumber by rail from Ottawa. That shipped by barges to Lake Champlain or Albany is to a market or depot for distribution to the manufacturer which may be done by railways requiring a single or double handling. On the other hand the manufacturer or consumer requiring a car-load or more of lumber, he may order from Ottawa; the car goes directly, perhaps, by railway siding into the manufactory, saving handling and commission to middle men.

The transport by water although cheaper *per se* necessitates terminal facilities, a point of shipment where products naturally centre, and a point of discharge where a market or natural centre of distribution is created; where the inducements are sufficient to obtain the investment of individual or corporate capital in providing these facilities, which railways are willing to provide for each separate industry or manufactory, a railway may run adjacent to.

When proper facilities have been provided, railways in freight rates may discriminate in favor of all-rail, where, under an economical administration solely interested in transportation by the cheapest methods, products would be conveyed by water.

In 1872 the Senate of the United States appointed a Select Committee comprising some of the ablest members of that body, to investigate and report upon the subject of transportation between the interior and the seaboard. A full and extensive enquiry was made, the evidence taken before the Committee making a printed volume of some 1,000 pages. They submitted a lengthy report known as "Transportation Routes to the Seaboard." This investigation covered both rail and water transport, and as stated in their report, involved a study of railway abuses in all their various phases, and the whole question of the economy of transport by rail and water.

The examination extended to the several systems of railway regulations in Europe that of "Great Britain, representing the system of direct Government regulation without financial aid or co-partnership; of France, the system of financial aid or co-partnership with the most rigid surveillance and regulations; of Belgium, the system of indirect regulation of the whole through State ownership and management of a part, and entire non-interference with the private corporations, except in matters of safety and police." They state that, "the remarkably low rates in Belgium furnish a powerful argument in favor of State ownership, and that cheap transportation is to be obtained only through competition under Governmental control."

They strongly favored the water-ways of the lakes and River St. Lawrence, or northern route. They remark "that through the establishment of reciprocal trade

relations with the Dominion of Canada, which shall induce the construction of the Caughnawaga Canal (if such an arrangement can be made), and which will encourage Canadian shipmasters to compete for the carrying trade of the lakes, will also materially cheapen the cost of transport to New England."

"The construction of the canals of Canada began in the year 1821, and was continued for some years, with no other purpose than that of opening avenues for internal communication between the different section of that colony. But the development of the resources of our North-Western States, consequent upon the opening of the Erie Canal, in the year 1826, soon led to the adoption of an extended system of improvements, designed to compete for the rapidly increasing commerce of that section of our country. That competition is more active to-day than ever before, and it constitutes an important feature in the question as to the best mode of transporting the surplus products of the West to the seaboard and to foreign countries. The spirit of enterprise which has characterized the Province of Canada in the inauguration and construction of her canal system, has not been surpassed in boldness and persistent energy by those efforts which carried to successful completion the canal system of New York, and which have made that State the first in the American Union in population and in wealth, and her chief sea-port, New York, the commercial and financial metropolis of the Western world."

"The business of the Welland Canal not having very materially increased, is undoubtedly due to the fact that a large proportion of the vessels built on the upper lakes during the last ten years are too large to pass through the locks of the present canal. The Welland Canal is now being enlarged, so as to admit the passage of vessels of 1,000 tons, carrying about 50,000 bushels, or three times the capacity of vessels which can now pass through its locks."

The following summary of some of the conclusions and recommendations resulting from this enquiry may be of interest and, in some degree, pertinent to the subject.

"That all railway companies, freight lines, and other persons or organizations of common carriers, engaged in transporting passengers or freights from one State into or through another, be required, under proper penalties, to make publication at every point of shipment, from one State to another, of their rates and fares, embracing all the particulars regarding distance, classifications, rates, special tariffs, drawbacks, &c., and that they be prohibited from increasing such rates above the limit named in the publication, without reasonable notice to the public, to be prescribed by law.

"That combinations and consolidations with parallel or competing lines are evils of such magnitude as to demand prompt and vigorous measures for their prevention.

"That all railway companies, freight lines and other organizations of common carriers employed in transporting grain from one State into or through another, should be required, under proper regulations and penalties to be provided by law, to receipt for quantity, and to deliver the same at its destination.

"That all railway companies and freight organizations receiving freights in one state, to be delivered in another, and whose lines touch at any river or lake port, be prohibited from charging more to or from such port than for any greater distance on the same line.

"Stock inflations, generally known as stock waterings, are wholly indefensible; but the remedy for this evil seems to fall peculiarly within the province of the States, who have created the corporations from which such practices proceed.

"The evil is supposed to be of such magnitude as to require prompt and efficient State action for its prevention, and to justify any measures that may be proper and within the range of national authority.

"It is believed by the Committee that great good would result from the passage of State laws, prohibiting officers of railway companies from owning or holding, directly or indirectly, any interest in any non-co-operative freight line or car company operated upon the railroad with which they are connected in such official capacity.

"Competition which is to secure and maintain cheap transportation must embrace two essential conditions:—1st. It must be controlled by a power with which combination will be impossible. 2nd. It must operate through cheaper and more ample channels of commerce than are now provided.

"Railway competition, when regulated by its own laws, will not effect the object, because it exists only to a very limited extent in certain localities; it is always unreliable and inefficient, and it invariably ends in combination. Hence, additional railway lines, under the control of private corporations, will afford no substantial relief, because self-interest will inevitably lead them into combination with existing lines.

"The only means of securing and maintaining reliable and effective competition between railways is through national or State ownership or control of one or more lines, which, being unable to enter into combinations, will serve as regulators of other lines.

"The uniform testimony deduced from practical results in this country and throughout the commercial world is, that water-routes, when properly located, not only afford the cheapest and best known means of transport for all heavy, bulky and cheap commodities, but that they are also the natural competitors and most effective regulators of railway transportation.

"The above facts and conclusions, together with the remarkable physical adaptation of our country for cheap and ample water communications, point unerringly to the improvement of our great natural water-ways and their connections by canals or by short freight railway portages under control of the Government, as the obvious and certain solution of the problem of cheap transportation.

"After a most careful consideration of the merits of various proposed improvements, taking into account the cost, practicability and probable advantages of each, the Committee have come to the unanimous conclusion that the following are the most feasible and advantageous channels of commerce to be created or improved by the National Government, in case Congress shall act upon this subject, viz:—

"1. Mississippi River.

"2. A continuous water line of adequate capacity, from the Mississippi River to the City of New York, *vid* the northern lakes.

"3. A route adequate to the wants of commerce through the central tier of States, from the Mississippi River, *vid* the Ohio and Kanawha Rivers, to a point in West Virginia, and thence by canal and slack-water or by freight railway to tide-water in Virginia.

"4. A route from the Mississippi River, *vid* the Ohio and Tennessee Rivers, to a point in Alabama or Tennessee, and thence by canal and slack-water or by a freight railway to the ocean.

TOLLS UPON THE ST. LAWRENCE ROUTE.

Upon what principle, the tolls upon the Canadian canals have been levied is difficult to determine. A specific sum per ton was charged upon articles transported through the Welland Canal and through each of the St. Lawrence Canals; The several canals on the River St. Lawrence were subsequently grouped together under the name of the St. Lawrence Canals, the route divided into sections, with a specific toll for each. In 1850, the toll sheet shows the first indications of the desire to attract to the St. Lawrence route the traffic of the Erie Canal. The object was not, as now, to obtain the export trade, which was little, only 77,078 bushels of wheat and corn being exported from Montreal in 1850. The desire was apparently to divert from the Erie and Champlain Canals the supply and the trade of the New England States. A through rate was given on the 21st November, 1850, from Lake Erie to Lake Champlain. Taking one article for convenience and avoiding unnecessary figures—corn—the toll was \$1.12½ per ton, which was less than the tolls *vid*

the Erie and Champlain Canals. The local rate through the Welland and St. Lawrence Canals was $37\frac{1}{2}$ cents per ton on each, or one-third of the through rate. We may have here an indication of the principles which governed the rates of toll. They were not founded on the expense of maintenance and repairs, nor a tax levied per ton mile, according to the cost of operating the respective canals, but with the hope, by lower tolls than the Erie Canal, to divert its trade. The specific rate founded upon this principle for the Welland and St. Lawrence Canals has continued to the present time, and lowered according to the expediency at the date of change. On the 27th April, 1850, previous to the date of opening of navigation, another proclamation was made reducing the through rate on corn to 70 cents per ton, and 30 cents for each of the sections Welland and St. Lawrence. Before the opening of navigation, 1853, a further effort to compete with the Erie Canal was made; a toll schedule was proclaimed for the Welland, St. Lawrence and Champlain Canals. The tonnage passing two sections 25 per cent., and passing three $33\frac{1}{2}$ per cent. off the rate of schedule. Iron and salt paying tolls on the St. Lawrence were free through the Welland Canal. Tolls on these articles, paid upon the Champlain Canal, were refunded at the Lachine Canal. Wheat, flour and corn, having paid tolls on the Welland, passed free through the St. Lawrence and Chambly Canals. The tolls would allow these articles to reach Lake Champlain or the Hudson River *vid* the St. Lawrence, at less than one-half the tolls on the Erie Canal. This policy appears to have been continued to 1860. It was hoped by the lake and river navigation allowing the passage of large vessels to the point of transshipment in barges, a longer voyage from Western ports than the entrance to the Erie Canal at Buffalo, and by the low rate of tolls, to have diverted trade. This endeavor would have perhaps been successful if the large vessels could have reached Lake Champlain by a canal branching off from the Beauharnois Canal, saving locking down and up and the long distance around by the River Richelieu. Canada had expended a large sum of money with the principal object of obtaining the trade between the West and the New England States, and omitted building the link which would have rendered this policy successful. Previous to the meeting of the Legislative Assembly of the Province of Canada in 1860, there was a similar agitation, to the present, for free canals. At this session there was inaugurated a radical change in the toll policy, virtually the abolition of tolls and a free canal system introduced. This strong measure was taken in a further attempt to obtain the transport of Western cereals, to divert which from the Erie Canal all efforts, hitherto made, having proved unavailing.

The policy was adopted after some opposition. The season of navigation opened with the same tolls upon the Welland Canal as previous to the adoption of this policy, the St. Lawrence Canals being free. For through tonnage from Lake Erie 90 per cent. of the Welland toll was refunded if the vessel should enter the St. Lawrence Canals; and on reporting inwards at any Canadian port on Lake Ontario, or the River St. Lawrence, to be considered as shipped *vid* St. Lawrence Canals. Tonnage up through the St. Lawrence Canals, or from Canadian ports, was charged 10 per cent.

of the Welland Canal toll on passing through that canal. This policy was a direct discrimination against United States ports on Lake Ontario and the River St. Lawrence, which, it might be supposed, if tolls had any effect upon the direction of trade, would have resulted in still further diverting to Buffalo the trade of these ports, which had already been affected by the increase in the size of vessels on the Upper Lakes. This free canal policy was continued for three years; there was a large increase in tonnage over previous years on account of the foreign demand for cereals; the Erie Canal tonnage, with increased tolls, raised to a corresponding extent. The great movement of cereals from the West in these three years followed the natural channels of trade, the tolls upon tonnage through the Welland Canal to American ports on Lake Ontario and the St. Lawrence did not prevent them from participating in this increased movement, while the free St. Lawrence, without the "incubus of tolls," maintained the average movement of the preceding years. The failure of the free canal policy resulted in the tolls being re-imposed in 1863.

In discussing the effects of this policy, we may divide Ontario, contiguous to the lakes, in two sections—Upper Ontario above, and Lower Ontario below, the Welland Canal; the traffic through the canals may be classed as Canadian, American, and Canadian American.

Canadian traffic.—To reach Montreal, the St. Lawrence Canals being free, Lower Ontario products passed free of tolls, and Upper Ontario products were charged 10 per cent. of the Welland Canal tolls, or a discrimination of that amount in favor of Lower Ontario products. Upper Ontario products, to Canadian ports on Lake Ontario, were also charged 10 per cent. of the Welland Canal toll, while Lower Ontario products passed the St. Lawrence Canals free.

The Ottawa Canals being free, on account of the differential duties on Colonial timber having been taken off, the Ottawa manufacturer of timber and lumber had an advantage of 10 per cent. of the Welland Canal tolls, over the Upper Ontario manufacturer shipping by the St. Lawrence.

American Traffic.—This business was charged full Welland Canal toll; whether the St. Lawrence Canals were free or otherwise, was immaterial, as none of that traffic would be attracted to Montreal, as has been previously fully shown, it went to Oswego and other ports for milling, and the home consumption of the Eastern States. The only effect of high tolls upon the Welland Canal would be to divert that traffic to Buffalo, which the large vessel was already doing.

Canadian American.—While the Reciprocity Treaty was in effect, the natural markets of the cereals and lumber of Ontario were New York State and the Eastern States.

That portion of the trade which can be discerned, that paid full tolls on the Welland Canal, was Canadian to American ports, down, and *vice versa*, up. That is, Lower Ontario products reached Montreal without tax, and Upper Ontario products

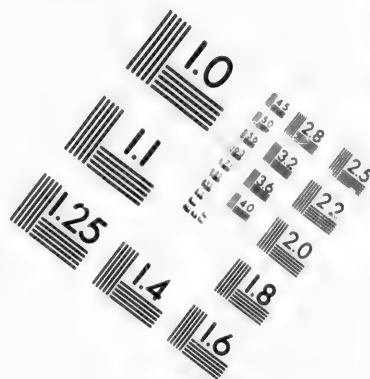
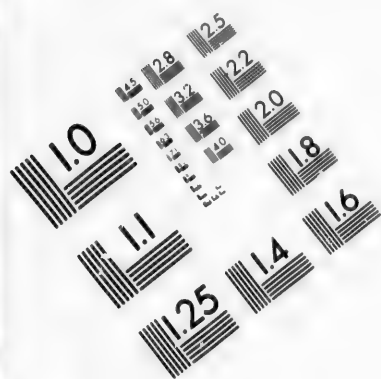
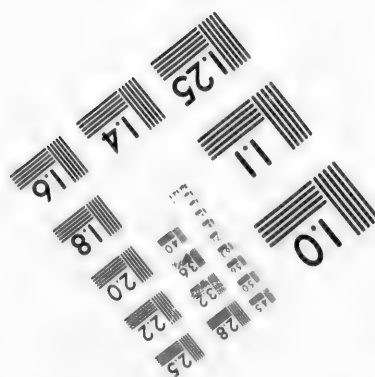
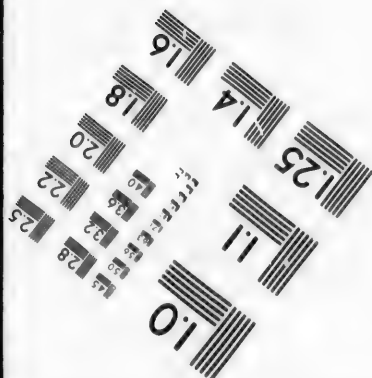
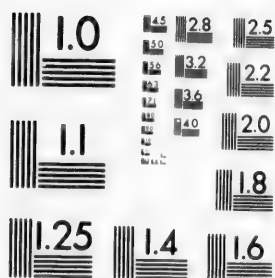


IMAGE EVALUATION TEST TARGET (MT-3)



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say to Oswego, paid full canal tolls ; the lumber of Upper Ontario was taxed, while that of the Ottawa could go up the Rideau Canal, to American ports, without paying tolls.

The trade of Upper Ontario during the three years this policy was in force amounted to 315,500 tons, consisting principally of lumber, wheat, barley, oats and flour, which was taxed full tolls, while the Lower Ontario products passed to their markets free.

In still further noting the effect of this policy and that adopted in 1853, we take first, the attraction of the trade of Lake Ontario, and of that through the Welland Canal down the St. Lawrence Canals ; second, the effect the reduction and abolition of tolls upon the St. Lawrence route had upon the traffic of the Erie Canal. As to the first, the following calculations are based upon the total tons moved upon the St. Lawrence and Welland Canals, and the percentage of the movement of the former to that total. The tolls per ton are the total amount of tolls received, divided by the tons moved :—

Years inclusive.	1843-52.	1853-59.	1860-61.	1863-69.
	cents.	cents.	cents.	cents.
Average toll per ton, St. Lawrence Canals.....	24½	10½	Nothing.	6½
Percentage of tons moved on St. Lawrence Canals to total movement on both canals.....	39·0	40·0	44·7	45·7

We find there was a gradual increase in the percentage moved from Lake Ontario downwards, not due to the decrease of tolls, but to the increased population and productions of Lower Ontario including the Ottawa Valley. The increase of some 4 per cent. in the three years of the free St. Lawrence was not caused by abolition of tolls, but other causes alluded to subsequently.

It may also be observed that the seven years following the free canals, when tolls had been re-imposed, it did not decrease the percentage of movement, but the opposite. We may therefore conclude that both the policy adopted in 1853, and the three years free St. Lawrence Canals, both discriminating against Upper Ontario products, did not effect the object contemplated—force commerce from its natural channels, nor compel any productions to reach Montreal, which, from economic considerations, would not have taken that direction.

As to the second branch of the inquiry, the effect of the toll policy when compared with the traffic of the Erie Canal.

In the following calculations, I have taken the average of three years at various periods, the total movement upon the Erie, Welland and St. Lawrence

Canals is combined, and the percentage of the movement on each to the total taken. The toll per ton is obtained in the same manner as before:—

Three Years.	1850-52.	1857-59.	1860-62.	1872-74.	1880-82.	1883.
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Erie Canal	65½	54½	57½	58½	69½	65½
Welland Canal	20½	26½	23½	24½	13½	18½
St. Lawrence Canals	14	19½	18½	17	17½	16½
Total per cent.....	100	100	100	100	100	100

Three Years.	Toll per Ton.	Toll per Ton.	Toll per Ton.	Toll per Ton.	Toll per Ton.	Toll per Ton.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Erie Canal	1 54	1 00	1 35	0 76½	0 18½	Free.
Welland Canal	0 29½	0 20	0 14½	0 17	0 15½	0 16½
St. Lawrence Canals	0 18½	0 07½	Free.	0 06½	0 06½	0 06½
Average, three Canals.....	0 67	0 43	0 50	0 33	0 13½	0 07½

From the foregoing it may be observed that the Erie Canal's per centage was about the same in 1883, the first year of the abolition of tolls, as thirty years before, when it received \$1.54 per ton as toll; that in 1883 there was a decreased movement compared with the three previous years before tolls were abolished, that notwithstanding the free Erie Canal, the movement through the Welland Canal increased, proving that the enlargement of the canal was a more important factor than free canals.

The percentage of movement through the St. Lawrence Canals was nearly as great in 1850-52 when 18½ cents per ton were received as toll, as in 1883 when 6½ cents were received.

With regard to the free St. Lawrence Canals 1860-62, both upon the Welland and St. Lawrence Canals the movement decreased as compared with the previous three years, while upon the Erie Canal, it increased, although the tolls were raised and \$1.35 per ton received as toll instead of \$1.00 from 1857-59.

The three following years, 1863-65, would have been compared, but statistics were compiled for the fiscal year, making one-half year in 1864. Consequently, the season of navigation could not be applied in both cases, but if such could be done it would show that the re-imposition of tolls in 1863 had no effect upon the movement by the St. Lawrence route.

A petition to His Excellency the late Governor General of Canada, of ship-owners, manufacturers, merchants, ship-builders, master mariners, with regard to canal tolls, accompanied by a letter dated March, 1880, to the Right Hon. Sir John A. Macdonald, K.C.B., Premier of Canada, which calls attention to the tolls imposed,

upon vessels and their cargoes, on the St. Lawrence route, and other matters. It calls attention to statistical tables, stating "the figures of which are taken from trustworthy sources, and corroborate the various contentions set forth in the petition."

The heading of one section of the petition is, "Effects of reduction and removal of Canal Tolls," under which the policy of 1860-62 was alluded to, stating that it operated well, but it was, nevertheless, repealed in 1863.

A table is given of the receipts of grain at Montreal, showing the great increase in receipts during these three years over previous and subsequent years. It is stated:—
 "The above column of figures shows, in strong colors, the effect of the reduction of the canal tolls in increasing the traffic, and the precedent furnished by the Order in Council of May, 1860, for present action in a similar direction, is good."

It is also stated:

"Business will certainly increase on the St. Lawrence route by a reduction or removal of tolls, dues and expenses, just as they did on that route in 1860-61-62, under the Order in Council of May 19th, 1860, and as it has recently done on the Erie Canal, under the reduction and abolition of its tolls. The St. Lawrence route will gain in strength in the greatly increased tonnage what it loses in lower tolls."

This petition does not state that in these three years there was a large increase of production in the Western States; that there was a large foreign demand for wheat and corn. It does not state that improved facilities for transshipment at Montreal and Kingston had only been afforded about that date. It does not state that the Southern ports were blockaded in April, 1861; that the derangement of the currency and other effects of the Civil War induced shipments to the St. Lawrence from the West, nor does it give any comparative statistics as to the increased movement *vid* the Erie Canal.

From the prominence given to this increased movement during the three years compared with the previous and subsequent three years, which is attributed, in this petition to the Order in Council of May 19th, 1860, the causes may be investigated.

The greatest movement was in 1861 and 1862. In the autumn of 1860 it was represented that the crops of England and France were in jeopardy from continued rain, which had already done much damage, large orders for grain were sent to America and the Black Sea. The crops were abundant in the West; at lake ports the receipts of grain were more than double those of 1859. It is stated in *Hunt's Merchants' Magazine*, October, 1860:—

"The freights on the lakes and Western waters have risen rapidly under the influx of grain, and the rise in freight has come off the price of wheat at the other end of the route." From the same, in February, 1861: "Fortunately, at such a juncture, the state of the grain market has been such as to attract unusual quantities of produce, and the exports from the port of New York have, in the last quarter of 1860, been 30 per cent. larger than ever before in the history of the country."

"The Export of wheat and flour from the United States, since September 1st, exceeds, by \$25,000,000, the export of the same articles, for the same period in 1859."

In June, 1861, the exports were larger than ever shipped to foreign ports in a single month before. In consequence of the disturbed condition of the South and West, a large amount of produce will be diverted from other channels to these ports. The account of the grain harvests in Europe, in the autumn of 1861, was such as to sustain active shipments."

In December, 1861, the same magazine remarks:—

"The grain movement will form one of the extraordinary features of the year 1861, and contribute largely to the strength of the country in sustaining an expensive war."

The movement was so large that the New York Chamber of Commerce forwarded a memorial to the Canal Commission, to maintain navigation to the latest moment. The latter ordered the repair contractors to have prepared for use, ice-breaker's tools and implements, to aid navigation.

In November, 1862, it was stated that the decline of domestic exports grew out of the heavy state of the exchange market, and the lower prices of American produce in England; that although the harvests in Europe were not of the best description the supply of old grain was such as to preclude high prices.

In September, 1863, it was stated the harvests in Europe were better than for seventeen years; that France and England, which the previous year took 97,000,000 bushels of wheat, will take none this year.

In December, 1863, that the decline in prices of breadstuffs and provisions abroad, at a time when speculative demand sprung up, have placed the largest staple export above the English rates, and wheat and corn ceased to be exported. The decline of commercial bills added to the distrust attached to them by reason of the long continued decline of prices abroad sustained by gold. "Under the paper system, where notes are based on gold alone, and around which the paper flood surges from hour to hour, the matter requires to be closely watched to avoid great losses."

Sufficient has been quoted to demonstrate the fallacy of citing the increased movement of breadstuffs over preceding and subsequent years to have been due to the toll policy of May, 1860.

To still further illustrate the effect upon our canals, and upon the Erie Canal, of the changes in tolls, some statistics will be given.

The following statistics show the effect of a free canal and reduction of tolls on both routes.

I have combined, for several periods of three years, when there was a large movement upon both routes, also, the three years previous and subsequent to 1860-62, the receipts of wheat and corn by Lachine Canal, at Montreal, and at tide-water, by the Erie Canal. The percentage of the total carried by each is given, also; the average toll for the period on a ton of wheat and corn from Buffalo to Albany, and from Lake Erie to Montreal.

Three Years.	1857-59.	1860-62.	1863-64.	1871-73.	1877-79.	1880-82.	1883.
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Erie Canal	88	81	88	78	79½	79¾	79½
Lachine Canal.....	12	13	12	22	20½	20¼	20½
Total per cent.....	100	100	100	100	100	100	100

Three Years.	1857-59. Toll per Ton.	1860-62. Toll per Ton.	1863-64. Toll per Ton.	1871-72. Toll per Ton.	1877-79. Toll per Ton.	1880-82. Toll per Ton.	1883. Toll per Ton.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Erie Canal.....	1 61	1 72½	1 89½	0 92	0 34½	0 34½	Free.
Lachine Canal.....	0 33½	0 02	0 35	0 35	0 35	0 35	0 20
In favour of St. Lawrence route	1 27½	1 70½	1 51½	0 57	*****	*****	*****

From the foregoing it may be observed that the receipts, of wheat and corn, at Montreal in 1860-2, with \$1.70½ cents toll per ton in favor of the St. Lawrence route, with the Erie Canal, so crowded with traffic that means were provided to prevent the closing of the canal by ice, were only 1 per cent. greater than the preceding and following periods.

It appears that the lowering of tolls upon the Erie Canal has had no effect in increasing the movement through it; that in 1877-79 the percentage was the same as in 1883, with 20 cents toll in its favor.

To show the effect of a free Erie Canal upon the St. Lawrence route, take the percentage of the latter in 1883, it was rather larger than the preceding three years, before tolls were abolished.

To sum up the effects of this policy, it was to place in the pockets of one section of the community, the amount of tolls remitted, at the expense of the general taxpayer. It is evident that the tolls upon the Canadian canals, from the date of their opening, have not had the slightest effect upon the movement of property; that trade followed recognized and established channels of commerce; that there has not, in reality, been any competition between the Erie Canal and the St. Lawrence Canals. The Erie Canal, in its toll policy, was totally different from ours; it not only paid the cost of construction, but has been one of the greatest financial successes of any public work ever constructed. On our canals, the tolls have hardly exceeded the cost of maintenance and repairs. The Erie Canal, being a small, imperfect and expensive navigation, could not compete with the railways with high tolls, which were forcing the boatmen to carry at ruinous prices, tolls were reduced to benefit them and prevent the destruction of the boating interest; these reductions have not had the desired effect, as will be subsequently shown under another heading. The Erie Canal has only, within the last few years, reduced tolls to a point where its policy could be compared with ours; in 1882 there was barely a surplus of some \$6,460 above expenditure upon the State canals. It remains to be seen whether the canal would not have had as great a traffic by a continuation of that policy, maintained in a more efficient manner, and kept in better repair, than by requiring, each year, to obtain an appropriation from the Legislature for the purpose. Although a few bushels of grain may have taken one route or the other, I feel confident, as a principle, that the tolls on either route have not had, the slightest effect, during the whole history of the canals, in determining whether western cereals should reach tide-water at Montreal or Albany.

The competition of the St. Lawrence route has been used as a lever for the reduction of tolls, and for a free Erie Canal; but, in fact, it has been the railways that have influenced its tolls policy.

In support of previous assertions and conclusions, I quote the opinions of a gentleman long conversant with the canals of New York State and its toll policy, which are, in many instances, directly applicable to the agitation for free canals upon the St. Lawrence route:—

"The fact that the 'Free Canal' policy is generally suggested in connection with extensive schemes for enlarging and otherwise improving the canals, affords strong ground for the suspicion that the 'contractor's ring' (so called), which the constitutional amendment of 1874 virtually dethroned, is deeply interested in the success of the present proposed amendments.

The sweeping reduction in tolls has been of no benefit to the boat owners.

"A desire to increase the profits of the boat owners is the only plea which can be offered in justification for the reduction and abolition of tolls since 1876. The owners of elevators, the insurance companies, the commission merchants and all persons who directly profit by the business of the canals, have absorbed all which the State conceded in tolls. The boatmen have gained nothing, and their earnings have declined with every reduction made in the rates of toll.

"Reducing tolls does not aid the carrier a particle, because the toll imposed is a part of the cost of canal transit, and, if the roads desire to compete with the canals, it is only necessary to put their rates on a par with the canal, and they can do this, if so disposed, with the tolls entirely abolished. Therefore, if the tolls imposed are not high enough to make profitable canal freights exceed the cost of carriage by rail, it certainly cannot be asserted that the act of imposing such rates of toll will injuriously affect the canal carrier, or repel traffic from the canals. Hence, it is neither necessary to abolish tolls nor to reduce them so low, that the aggregate revenues will fall below the constitutional charges thereon; unless it be determined to compel the railways to do their transportation business at a heavy loss during the navigable season, at the cost of the taxpayers of this State, for the sole benefit of non-residents of the State.

"Besides, the experience of the past demonstrates that all concessions which have been made in tolls have had no beneficial effect on the earnings of the boatmen, and the only practical result of such concessions has been to furnish a wider margin for extortionate terminal, transfer, and insurance charges.

"The State should not engage in a ruinous competition with the railways at the expense of the tax payers.

"When canal tolls are reduced at the expense of tax payers to so low a rate that property can be transported by the water route below actual cost by the railways, the State is unfairly discriminating against the roads. The railways must either abandon their freight traffic or reduce their charges at all competing points to correspond with those by the water route, or as a retaliatory measure, to lower figures than the water route can afford.

"Of course all this business is done at a loss by the roads, but this loss is partially or wholly, as a matter of compulsion, retrieved on their local business, which may be beyond the ranges of competition, and by excessive rates after navigation by the water-route is suspended. This discrimination against the merchants and producers in this State, in favor of their competitors at the West, is the natural result of a policy which resorts to taxation instead of revenue to maintain the canals. Their is neither justice nor business sagacity in such a policy. The constitutional charges upon the revenues of the canals are just as much a part of the cost of canal transportation as the expense of the team which tows the boat, or as the repairs of the superstructure are a part of the cost of railway transportation.

If the canals possess any intrinsic value, and are worth maintaining, it is because they furnish occupation for the boatmen and facilities for cheap transportation, and

in using them the boat and the property transported are equally benefitted. The assumption that the benefits derived by those who navigate the canals should be conferred without any expense to the boat or property transported, but at the sole cost of the tax payers, is without reason or justice.

"All this clamor for a free or partially free canal springs from a delusion. It is asserted that the legitimate trade of the City of New York is being diverted.

"If we had no canals, the innocent cause of unjust and unnecessary taxation, we should hear nothing about diversion. At an earlier period the State of New York possessed the only outlet from the West to the Atlantic seaboard, and the city of New York was the distributing port for Western products. But now there is not a port of any importance from Maine to Texas, which does not possess rail connections with every part of the Continent, and if the whole wealth of the State of New York were to be expended in subsidizing boat owners and enlarging our canals, we could not force trade from its legitimate channels, nor overcome the law of supply and demand."

The following extracts from reports of the Finance Minister and Commissioner of Public Works of Canada, in 1863, as to the effect of the Order in Council, May, 1860, corroborates previous assertions.

Extracts from Report of Finance Minister, 1863:

"In this connection I propose to consider the effect which the removal of the tolls from the St. Lawrence Canals and the reduction of those on the Welland has had on the movement of property through those works.

"That the movement of property by the St. Lawrence route has been greatly augmented during the past three years is sufficiently apparent from the figures given above, and we may congratulate the country thereon; but that this increase has been due to the remission of the tolls is not to be assumed without taking into account other circumstances which have mainly influenced the direction of trade.

First among these circumstances may be stated the greatly increased production of cereals in the Western States, and the figures presently introduced will show that in proportion to that increase and to the whole volume of agricultural produce moved from Lakes Erie and Michigan to tide water, we have not obtained so large a traffic since the removal of the tolls as we obtained prior to the adoption of that policy. * * * Hence, it appears that the whole quantity of Western wheat and flour which was transported to tide water through the New York and Canadian canals during the past seven years, we obtained for the St. Lawrence route in:—

YEAR.	Per cent.
1856.....	7.03
1857.....	15.04
1858.....	12.01
1859.....	16.08
1860.....	7.16
1861.....	8.26
1862.....	11.04

"These are the principal commodities which have hitherto passed through the St. Lawrence Canals. If we include with them the Indian corn, which figures so largely in the Welland and Erie Canal returns, the percentage will become still less favorable to us; and the proportions will be still further reduced by bringing into comparison the cereal products of the Western States which are carried to tide water by the several railways converging on the Atlantic ports.

" Among the circumstances which have influenced the direction of trade, may also be reckoned the improved facilities now available at Kingston and Montreal for the trans-shipment of grain. These facilities have been created within the past four years, and there is little doubt but the advantages they afford have a money value to shipowners greater than the tolls now imposed.

"It is also known that the owners of Western produce have been induced to direct their property to Canadian ports, by considerations connected with the derangement of the currency of the United States.

"While we have failed to obtain so large a proportion of the Western trade, since the removal of the tolls, as we obtained in 1859, and in preceding years, the tolls levied on property passing through that canal, which is the chief competitor with the St. Lawrence route, have been materially increased, as the following comparison of tolls on the three principal articles will show:

	Toll per 1,000 lbs. per mile. — 1860	Toll per 1,000 lbs. per mile. — 1862.
	mills.	mills.
On Corn	2	2½
Flour.....	2	3
Wheat	2	3

" This increase is equivalent to an advance of 70 cents per ton on wheat and flour from Buffalo to tide-water, and 40 cents per ton from Oswego to tide-water, whilst the advance on corn is equivalent to 35 cents per ton from Buffalo and 20 cents per ton from Oswego.

"The rates of freight have also increased by the Erie Canal, and they have increased in a still greater ratio by the St. Lawrence.

" During the four years next preceding 1859, the average freight for flour from Lake Ontario ports to Montreal was \$1.84½ per ton.

" In 1860, the year in which the tolls were removed from the St. Lawrence Canals, the rate of freight was \$2.11½ per ton.

In 1861 it was.....	\$2.56½ per ton.
1862 "	2.61 " "

" So that the increase over the average of the four years preceding 1859, has been—

In 1860.....	72 cents per ton.
1861.....	72 " "
1862.....	81 " "

" If we add to these figures the toll remitted, we find that the forwarders received, over the average rates which they obtained in the four years above alluded to—

In 1860	\$0.49 cents per ton.
1861.....	0.9½ " "
1862.....	1.03 " "

" Comparing, in a similar manner, the rates of freight obtained for carrying wheat, we have a still more striking example of the advanced rates which the forwarders have been able to exact.

The average freight rates for wheat, from Lake Ontario ports to	
Montreal, 1855, 6, 7 and 8, was.....	\$1.81 per ton
In 1860 the average rate was	2.80 "
1861 it was.....	2.72 "
1862 "	2.71 "

"Thus the advance, over the average rate during the four years first named, was—

In 1860.....	\$1.21 per ton
1861.....	1.13 "
1862.....	1.13 "

"Adding the tolls relinquished, by the Province, it will be seen that the advance obtained by the forwarder has been—

In 1860.....	\$1.43 per ton
1861-62.....	1.35 "

"Together with the tolls due to the tonnage of his vessels

"Whatever else may be urged in favor of free canals, it certainly cannot be said that the policy of 1860 has been productive of benefit, either to the producer or consumer of Western breadstuffs; and from the advance which has taken place in the freights by the St. Lawrence route, as well as in both tolls and freight by the competing route to tide-water at Albany, it is abundantly manifest that the forwarder can pay a moderate toll without unduly trenching upon his profits.

"It can be shown, from reliable data, that in so far as the actual cost of transport (including, therein, the canal tolls recently imposed) is concerned, Western produce can be carried to tide-water much cheaper by the St. Lawrence than by any competing route, and we must trace our failure to obtain for our canals a greater proportion of the Western trade to other causes than the charges heretofore imposed for the use of those works. I am persuaded that the chief cause of that failure lies in the absence of sufficient competition among forwarders engaged in the St. Lawrence trade, in the financial relations between shippers engaged in the Western trade and the capitalists of New York; and finally, and chiefly, in the lower rates of ocean freights from New York to Europe, occasioned by a greater competition at that port than is to be found at Quebec or Montreal.

"It is gratifying to know that the Canadian forwarder has been able to obtain the advanced rates above quoted, but we cannot find therein a justification of that policy which, in addition to other advantages, would give him the free use of costly works, which complete the grandest system of inland navigation in the world, and have not been constructed without imposing heavy burdens on the country.

"If it could be shown that the tolls remitted had gone in mitigation of the comparatively high rate of ocean freights to which our trade is subject, we might find, in that fact, some reason for making our canals absolutely free. But it has been shown that this has not been the result. The tolls have gone to enhance the profits of the forwarder, whose freight tariff has been regulated, not by the cost of doing his work, but by the competition with which he has to contend.

"There is but one course open for securing that quota of Western trade which the advantages of the St. Lawrence route gives us reason to anticipate. If we can give the owners of the largest vessels now profitably engaged in the trade of Lake Michigan, the option of trading to Kingston and the St. Lawrence, or to Buffalo, as may be found most profitable, we shall have thrown down the barrier which now forces the main current of trade into the Erie Canal. We shall have more than balanced the greater insurance and freights charged from our seaports to Europe over the corresponding charges from New York, and we may, thereafter, expect Quebec and Montreal to take rank amongst the greatest grain marts of this continent."

Extract from the Report of the Commissioner of Public Works, 1863.

"From other official returns, showing the course of trade through the provincial canals, it will be seen that, in this period of ten years, the purely American portion of it (*i. e.*, "from American to American ports"), which passed through the Welland

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Canal, averaged 51 per cent. of the whole, and the purely Canadian, through the St. Lawrence Canals (*i. e.*, "from Canadian to Canadian ports"), was 96 per cent. of the gross tonnage.

"Taking the next three years, since 1859, in which tolls have been abolished on the provincial canals, while they have been doubled on the up freight of the Erie Canal in 1860, and increased 25 per cent. on the down freight in 1861, the most remarkable increase is found in the business of that canal which persists in collecting tolls. In 1862 it had reached the enormous amount of 5,598,735 tons and \$3,188,943 tolls, showing an increase of 32 per cent. on tonnage and 56 per cent. on tolls over the maximum of the former period.

"On the other hand, the business on the provincial canals, in 1882, amounted only to 1,152,082 tons on the Welland Canal, and 756,870 tons on the St. Lawrence Canals, showing an increase of only 18 per cent. of tonnage on the Welland and a falling off of 17 per cent. on the St. Lawrence Canals, from the maximum of the former period. In these three years the official returns show that the American portion of the trade through the Welland, to and from Oswego and Ogdensburg, had increased to 58 per cent. of the gross tonnage, while the Canadian, through the St. Lawrence, remained at 91 per cent. of the gross tonnage on the canal, the same as the average of the previous ten years.

"In view of these statements, it cannot be assumed that the abolition of tolls on the provincial canals has diverted any business from the Erie Canal. On the contrary, it has continued to increase on that canal in a very remarkable manner, but has actually fallen off on the St. Lawrence, where, from the trade being more especially Canadian, a different result should have been produced, if exemption from tolls could have any influence in diverting the American trade into the same channel.

"In the attempt to divert trade by reducing tolls, we have the experience on the Erie Canal, preceding that of our own by about ten years. The result of this attempt is made known in the annual report of the Auditor of the Canal Department of the State of New York to the Legislature of that State, for the year 1861. In this report he says: 'The reduction which took effect upon the business of 1846 was the result of an arrangement between the authorities of this State, Pennsylvania and Ohio, after the completion of the canals in those States. The bonus paid, in 1851, for the competition in the canal trade, which has since been actively and successfully carried on, not for the benefit of trade within our own State, not to promote or develop a single interest within our own borders, or to alleviate the burthens of our people, and the consequent effort, in 1852, to retain trade by a further reduction of tolls, are remarkable exhibitions of mistaken policy and of unwise and inconsiderate legislation.' * * * In another portion of the report the auditor will show, by facts and figures, that although the State has lost revenue by the reduction in rates, it has not retained or secured a ton of traffic to the canal in consequence of that reduction.'

It is respectively submitted whether these facts and statements do not show that the course of the internal trade is wholly uninfluenced by the imposition of tolls, so long as they are confined within the limits which have been charged on either of these routes for the last ten years; and, if this be admitted, whether it is not governed by other general laws—the same laws, in fact, as regulate both the internal and external trade—those of production and consumption or of supply and demand. If, then, it has been found impossible by this means to force the Western trade into a channel leading only to a second rate market on this continent, where it is met by ocean freights which at once neutralize the superior advantages of our inland transport, it would appear to be a matter for consideration, whether, in the present state of the public finances, it is expedient any longer to tax the Province for the benefit of this trade; or whether that which naturally seeks this channel and must continue to increase with the growth and population of the country, should not be rendered immediately productive by the re-imposition of tolls.

The revenue which would be derived from the re-imposition of tolls would suffice, in the course of a few years, to make some of the important improvements in the navigation which have been in contemplation for many years past, and have only been postponed from financial considerations.

THE ERIE CANAL AND ITS TOLL POLICY.

Before the competition of railways began to make an inroad upon the traffic of the canal, the tolls were high. The New York Central, originally Buffalo and Albany Railway, was the first competing railway; following closely the route of the canal, it diverted from it the passenger traffic, express freights, merchandise and lighter articles. Until December, 1851, its competition was restricted, on account of canal tolls being levied upon all articles transported; at that date this tax was removed by the Legislature and the result was a still greater diversion of the canal traffic. Other competing railways being constructed and Buffalo becoming a shipping point for seaboard railways and railways running through the coal districts, it being the eastern terminus of upper lake navigation, there arose the strongest competition to the canal in the transport of the products of the Western States, by lake and rail *versus* lake and canal. The tons of property moved by the railways increased yearly, while the canal transported, year by year, a less proportion of the rapidly increasing merchandise of the East moving West. The canal endeavored, by reductions in tolls, to attract business and retain what it possessed of those articles, the transport of which was certain to gravitate to the railways. This action was fruitless. Tolls were from time to time reduced upon articles moving from tide-water, until eventually they were all placed upon the free list.

Towards tide-water similar reductions were made; articles placed upon the free list, in 1882—there were twenty-eight—principally those whose transport had been diverted to the railways. Sectional and local discriminations and in favor of various interests were made in the toll sheet. "In fact, one can hardly resist the conclusion, as he studies the subject, that these discriminations were made originally in favor of some individual or private interest and have continued ever since, to the detriment alike of the canal exchequer, the forwarder and the consumer." I quote from a report, to the Canal Board of New York State, made in 1877, by a Committee appointed to consider and report on the means of increasing the traffic through the canal and upon the subject of tolls.

At last came the agitation for abolition of all tolls, supported vigorously by the terminal cities, New York and Buffalo, and other cities along the line of the canal, and opposed by the rural and distant parts of the State. The New York Produce Exchange and other wealthy commercial bodies actively exerted themselves. In the Produce Exchange, a Young Man's Free Canal Club was instituted, to act in concert with similar organizations of other commercial corporations. There were, when the amendment was before the people, millions of ballots prepared and large quantities of pamphlets distributed. Central rooms were engaged in New York and Brooklyn, subscriptions were solicited, and every step taken that could be devised for giving success to the measure. These statements are taken from the report of the New York Produce Exchange, 1882.

Through this active propaganda the abolition of tolls, a constitutional amendment, was sanctioned by the people, who thereby taxed themselves for the repairs and maintenance of the canal.

The effect of the abolition of tolls will probably result, as every successive reduction of tolls, in loss of revenue and no corresponding increase in business. There has been a slight increase in tonnage carried in 1883 over 1882, but not so marked, above that of other years, as to lead to the conclusion that it resulted from a free canal—the principal increase being in corn, in which there has been a larger movement, both by rail and canal, over the previous year.

Each successive reduction in toll did not cheapen the cost of transportation, nor become a profit to the carrier, whom these reductions were intended to benefit. The smallest amount that the boatman could carry for and exist was known, he being in the hands of agents called "scalpers." They, with the commission merchants and consignees, all situated at Buffalo, made the contracts for the Western shipper, and profited while the boatmen and boating interest became yearly more impoverished and depressed.

The opinions of the prominent officials connected with the canal corroborate strongly these assertions.

The State Auditor remarked that the remission of tolls, as an independent measure, will not very much increase the tonnage. Heretofore the toll reductions have not increased the trade of the canals.

The Ex Comptroller, in his report to the New York Legislature, presented recently (1884), states:—

"It was anticipated and predicted, as results of this new departure, that there would be a large increase of business in the traffic of canals, because the cost of transportation would be reduced to the extent of the tolls remitted,
* * * In view of the fact that the general movement of freight through the State by the railways was larger than the previous years, and that the rates of freight charged by the railways were higher than those maintained in 1882, it must be confessed that the gain in canal tonnage has not been as large as was hoped. The average rates per bushel for the transportation of corn from Chicago to New York for the season were 7,10⁵/₁₀ cents, while in 1882, the average was 7,10⁸/₁₀ cents, showing a slight increase in cost, notwithstanding the remission of tolls, but the canal's proportion was nearly ½ cent per bushel lower, while the lake rates were ¾ of a cent higher than in 1882. The remission of tolls, however, made the business of the canal carriers, in a moderate degree, more profitable than in 1882.

"At the solicitation of shippers and carriers, the Canal Board, with the concurrence of the Legislature, at different periods made concessions in the rates of toll. In making these concessions it was believed that the tonnage of the canals would increase in the same proportion that the tolls were reduced, and hence there could be no loss in the aggregate revenue.
* * * * *
Strange as it may appear, the statistics of the canal show that no increase of tonnage has ever followed a reduced toll sheet which can justly be attributed to such reduction; and what is still more remarkable, they further show that the profits of the boat owners, instead of being increased, as was anticipated and desired, actually declined with every reduction in the rate of tolls."

From this report it appears that from 1862 to 1869, the period of highest rates after 1854, the carrier received, in excess of canal tolls, an average of \$3.41 per ton; from 1870 to 1874, with tolls reduced one-half, \$2.87 per ton; from 1875 to 1876, with a further reduction in tolls, \$1.77 per ton; from 1877 to 1882, a further reduction, \$1.71 per ton; in excess of canal tolls in 1883, tolls abolished, the carrier received \$1.63 per ton.

In all agitation for reduction of tolls, and finally for a free canal, the competition of the St. Lawrence route was a stock argument. Before our enlargement was commenced, if there was, through natural causes, an increased movement down the St. Lawrence, the cry was raised that the trade of New York was being diverted to Montreal. Since the enlargement of the Welland Canal, and while that enlargement was in operation, the northern waterway has occupied a prominent position in reports and arguments of those interested in the Erie Canal, in favor of reduction and abolition of tolls. The argument of one of the members of the New York Produce Exchange, made to the Joint Canal Committees of the New York Legislature, in favor of a free canal, thus alludes to the St. Lawrence route:—

"Already the Dominion of Canada, with a meagre income and limited resources, has expended nearly \$50,000,000 in the construction and development of the Welland Canal, in the desire to attract the grain-carrying trade to her borders, and invites the business over the bosom of a canal practically free."

In the United States the Welland Canal is generally referred to when the whole route is really intended. It may be observed, in the light of the demand for free canals upon this route, that the tolls are not considered of much importance for the prevention of the diversion of trade from New York. Another argument in favor of a free canal was, that the burthen of taxation is borne chiefly by the cities interested. It is claimed they pay the principal part of the taxation for the education of the outlying and more sparsely populated counties. It is asserted that of the taxation rendered necessary by a free canal, New York, Brooklyn and Buffalo will pay 62½ per cent., the cities and counties lying along the line of the canal will increase it to 90 per cent., leaving 10 per cent. to be paid by outlying or not directly interested districts. No assertion of this description can be made with reference to Montreal or other cities interested in a free St. Lawrence.

The construction account of the Erie Canal on the 30th September,

1882, was.....\$ 49,501,852 00

Gross revenue.....\$121,469,871 00

Deduction.....29,270,301 00

Profit on operating, exclusive of interest.....\$ 92,199,570 00

I have compiled, approximately, the revenue and deductions for repairs, maintenance and collection, from 1825, upon the St. Lawrence Canals, from 1831 upon the Welland Canal, to the end of the fiscal year, 1883:

Gross revenue, St. Lawrence Canals.....	\$3,700,000
Deductions.....	3,806,000
Gross revenue, Welland Canal.....	8,300,000
Deductions.....	<u>4,600,000</u>

The excess of revenue upon the Welland Canal, was due to the American traffic to the south shore of Lake Ontario and the River St. Lawrence, which, being deducted, as well as the hydraulic rents, the tolls upon the Canadian traffic have hardly paid the cost of maintenance and repairs. A free canal agitation assumes another complexion upon this route.

THE TOLL SHEET UPON THE ST. LAWRENCE ROUTE.

The toll sheet was originally divided into seven classes. Classes one and two, vessels and passengers; the remaining five, the different articles transported or, in railway parlance, first, second, third, fourth and fifth class freight, with the exception of the classification of the articles, which was not similar to that of railways. The changes which have been made in the toll sheet were principally the rate of tolls on the different classes, the changing of various articles from one class to another, and uniting several classes in one.

In 1873, classes two, three and four, were made one class, making three classes of freight, and a special class, which was created at this time; the toll sheet is virtually the same at present, with the exception of rates in the various classes which have been reduced.

The question arises on what principle tolls should be based or made. Assuming that the canal policy would be to obtain a sufficient revenue for the maintenance and repairs, not only of the Welland and St. Lawrence Canals, but of the unpaying feeders, the tax should be founded upon the cost of operating the Welland and St. Lawrence Canals, increased to a sufficient extent to compensate for deficiency in the revenue of the feeders. There are two methods of levying this tax—either upon the vessel alone, or upon her cargo, with a slight tax, as at present, on the tonnage of the vessel. The first appears to be the correct principle. The canal authorities can have no cognizance of the various elements which govern the cost of transportation and the rates of freight, whereby the toll could be levied in some relative proportion to the rate of freight or value of the commodity transported. A canal has not, as a railway permanent way and rolling stock to be affected by the amount of traffic upon it—one vessel or a hundred passing the canal, whether the cargo carried has been fifty or fifteen hundred miles, whether it is of great or small value, of high or low rate of freight, are all immaterial to the cost of locking a vessel through the canal. The tax should be levied upon the vessel without reference to the cargo transported. It would be a much more simple and convenient method of collecting a revenue; it would prevent all agitation of interested communities or individuals for discriminating rates in favor of some particular commodity or for some sectional interest. It would be

difficult under this system, to introduce the erroneous and fallacious principle that by raising or lowering the tax, either on one article, or the whole, of the commodities transported, would, within the limit of the small tax that has hitherto been imposed upon the canals, have the slightest effect in diverting trade from one channel to another, or increase the transport of any one article a single ton, either in direction or quantity. Time has proved that all discriminations in tolls, free canals upon the St. Lawrence route have not diverted tonnage from the Erie Canal, or affected in the slightest degree the channels of commerce through the United States. With purely Canadian business, it would appear a policy of "robbing Peter to pay Paul," or taking from one pocket and placing in another. The tax being infinitesimal, it would not have the slightest effect in influencing values dependent upon supply and demand, the producer would not obtain more for his products, nor the consumer purchase them at less cost. The remitted toll becomes an increased profit to some interest, between the two, which, by the taxation rendered necessary by a free canal system, would be chiefly taken from the earnings of the producer. The tolls, if remitted for the benefit of some interest, would not act as a bounty. Take, for instance, the vessel interest. It has been previously shown that the size of a vessel is a far more important factor than tolls. If the whole question of transportation by this route be investigated, it would be found that there are entering into the problems of trade and commerce by it, or rival routes, as well as the one cited, numerous other factors having greater weight in the direction of trade than the tolls hitherto levied, or that will ever be levied for the maintenance and operation of our canals.

The specific rate, per registered tonnage of vessels, collected, as on a turnpike in one direction, would be simple and equitable. The cargoes carried would only require to be noted for statistical purposes, and as a register of the commerce and trade through the Canadian canals.

On the Swedish canals they have both this system and that now in operation upon our canals. The vessel can elect, at the opening of navigation, whether it shall pay a specific rate per ton measurement, without reference to cargo, or pay the tolls according to quantity and character of the cargo transported. Which ever system is adopted must be continued throughout the season.

The second method of collecting tolls, or levying the tax upon articles transported, may be referred to. As has been stated previously, it is not within the province of a canal management to proportion the tax as an assessment, by value of the commodity transported, or by rate of freight. It costs no more to pass and lock a vessel through a canal, whether she carries a cargo of sand or wheat, of \$2,000 or \$50,000 value. The principle is theoretically correct, that the tax should be levied without reference to the value of the commodity or rate of freight. This principle has been partially adopted upon the Welland and St. Lawrence Canals, by the combining of the classes into one, with a specific rate where the articles in the class may vary from \$1 to \$200 per ton in value.

It would appear preferable, if the tax is upon the article transported, that it should be proportional to the rates of freight, according to the classification of steamboat and railway companies. A carload of sugar is not carried at the same rate as one of coal; neither does a steamboat carry a ton of merchandise at the same rate as a ton of grain. The toll to be equitable would, therefore, require to be some percentage of the freight rates. On this principle, there would be an extended toll sheet of regularly classified freight.

If the canal is considered as a competing route to railways, their freight rates and classification should be regarded, in order that the steamboat competing should not be weighted by the manner in which the tolls are levied. As a practical example, in which all the questions affecting water and railway transport enter, the Delaware and Raritan Canal, affording an inland navigation between New York and Delaware Bay, may be cited. This canal is leased and operated by the Pennsylvania Railroad Company. The rates of toll require to be arranged, with reference to three considerations:—1st. The canal is in direct opposition to the railway company that operates it. 2nd. The tolls cannot be placed so high that the vessels using it could not compete with the outside ocean lines between New York and Philadelphia, or other places on the Delaware Bay. 3rd. The tolls require to be sufficient to pay the interest, maintain the canal and operate it. It is evident a toll sheet, arranged to meet these different considerations, by a railway company practically conversant and directly interested, would be an excellent example of well-arranged rates and classification.

Articles of freight upon the canal are divided into seven classes—class Nos. 1, 2, 3, 4, and A, B, C. All unenumerated articles are classified according to the railway classification of the line running between the same points. The canal is some 43 miles long—about the same length as the combined St. Lawrence Canals, and 16 miles longer than the Welland Canal.

These are the rates of toll per ton of 2,240 pounds:

	Through Rates. Way per Mile.	
	\$ Cts.	Cts. Mills.
1st class.....	1 50.....	3 5
2nd "	1 20.....	3 0
3rd "	0 70.....	2 5
4th "	0 45.....	1 5
A "	0 40.....	1 2
B "	0 35.....	1 0
C "	0 30.....	0 8

On a ton of 2,000 pounds, nearly all the articles embraced in the above classes, from Lake Erie to Montreal, with some 70 miles of canal, the toll is 20 cents; through the Welland Canal, 27 miles, 20 cents; and St. Lawrence Canals, 43 miles, 15 cents.

The policy of the Erie Canal was to reduce tolls on West-bound freight. In 1882, tolls were taken off all articles moving from tide water. This example might

be followed with advantage on the St. Lawrence route. One of the chief disadvantages under which it has labored, and a cause of the increased cost of transportation, was the lack or small quantity of return freights. The percentage of West-bound freight is much less than the East-bound on all routes, both water and rail, from the West to the seaboard. By free canals for all freight moving from tide water, and by the tax for the maintenance and repairs being levied on the freight in the paying direction of the trip, it might have the tendency to attract to the St. Lawrence route westward tonnage. This is a simplification in the collection of tolls, and preferable to reduction of tolls. It places the vessel in the same position as a waggon loaded going through a toll bar; whether it returns empty, loaded or partially loaded, it pays no toll. It would allow those engaged in transportation an opportunity of apportioning their freight rates and dividing the tax over the East and West trip. They only have a knowledge of the requirements of their business and what may be expedient under the circumstances. If a vessel owner, without business agents in East, and unacquainted with the route, accepts a charter to carry grain to Kingston, he can know before he sails what tolls will be collected, and that any return freight he may obtain at Kingston, Oswego or other lake ports will be free of toll. There would be a free St. Lawrence in one direction, founded not upon the principle of free canals, but upon the most judicious method of levying a tax and allowing those directly interested and conversant with the subject to adjust the tax on the East and West freights in the manner most advantageous to their interest.

The cost of transportation on rail and waterways is generally reduced to the unit of the cost of carrying one ton a mile.

In railway statistics the receipts for freight are reduced to the ton mile and the cost of transport. In analysing any canal tax or toll, such a unit is the only means of conveying an intelligible impression of the relation of this tax to freight rates or cost of transport. When referring to a canal with the toll based upon the cost of operating and maintaining it, the tax would be a certain rate per ton mile of the actual mileage of the canal. In comparison with railways and rival water routes, the tax would be reduced to the mileage or distance the canal enables the vessel to carry freight. The St. Lawrence route is similar to the turnpike referred to previously. From Lake Erie to Montreal the first toll bar being the entrance to the Welland Canal; the second, the entrance to the St. Lawrence Canals. Dividing into two sections of equal length, we would have the Lake Ontario section of, say Lake Erie to Kingston; the St. Lawrence section from Kingston to Montreal. The capital account, before the enlargement, was nearly the same on both of these sections, and when the canals are fully enlarged this account, and the maintenance and repairs of both sections, will become enough alike, that an equal tax should be imposed on both sections. During the fiscal year 1882-83, the actual cost of moving a ton of property through the Welland Canal was 23.78 cents, that through the St. Lawrence Canals, 23.67 cents. With these facts in view, I cannot understand why a propeller should pay 20 cents a ton on freight, say from Sarnia to Toronto, while from Toronto to Mon-

treal, nearly the same distance, she pays 15 cents; or from Sarnia to Toronto should pay the same toll as from Sarnia to Montreal, double the distance and through nearly double the canal mileage. This discriminating rate, and even free canals, have been a signal failure in the past, as there is no trade on Lake Ontario to be diverted by a free St. Lawrence. If the object be to divert trade from Buffalo, the reduction should cover both sections—the Welland as well as the St. Lawrence Canals. When the surplus grain from the North-West moves eastward, the miller at Oshawa or on the Bay of Quinté, will pay the same tax on a ton of wheat as the miller in Montreal, a discrimination in favor of the latter.

Certain kinds of freight passing the Welland Canal, and paying toll, pass free through the St. Lawrence Canals. When arriving upon Lake Ontario, the only route that could be taken would be by the Oswego Canal, from Oswego, or by the railways from ports on the south shore of Lake Ontario and the River St. Lawrence. The free canals from this lake to Montreal have never prevented grain from seeking these ports, their business not being competing; neither has any grain arrived at Montreal since this policy was adopted, in 1853, that, in all probability, would not have arrived there if a legitimate tax per ton mile, according to the expense of the maintenance and the operation of the St. Lawrence Canals, had been imposed upon them.

The two competing routes, the Erie Canal and the St. Lawrence and Welland Canals, are competing for the same trade—export grain—the chief business in cereals of both routes. The degree and measure of discrimination, in favor of the Erie Canal free, that the present tolls on the St. Lawrence route afford, may be considered.

From Lake Erie to Montreal is some 375 miles; from Lake Erie to Albany some 350 miles, making the present tax a little over $\frac{1}{2}$ mill per ton mile. The rate from Lake Erie to Montreal is at present 20 cents per ton mile. It could be increased to $37\frac{1}{2}$ or 1 mill per ton mile, without affecting the route in comparison with a free Erie Canal. All computation with regard to diminished cost of transport by increased size of vessel and barges must be erroneous, if at present the scale of navigation, and in a greater degree, when the canal enlargement is completed, does not more than compensate for this toll.

In arranging a toll sheet, on sound and equitable principles, based upon the cost of operating the canal without reference to rival routes, either rail or water, to divert business from which has proved hitherto so abortive, and not with the delusive hope by discriminations in favor of routes, articles transported, or sectional interests, to divert trade from its natural channels. Upon these principles a tax could be levied in the following manner:

The first method proposed would be that the toll be levied on the measured tonnage of a vessel, without reference to cargo, and in one direction.

The second, that if tolls be levied upon the articles transported, it be done under a similar classification to the Delaware and Raritan Canal, and that all articles be free moving westward. For convenience, and to avoid unnecessary figures in an extended classification, there may be taken a definite rate for the whole tonnage

moved without reference to classes, for the object of showing the difference of rates and revenue by free canals westward, and the present method of collection.

Taking the two sections, Lake Ontario and St. Lawrence, each, say $187\frac{1}{2}$ miles in length, a toll of $1\frac{1}{6}$ mills per ton mile would be 30 cents a ton on each section. On railways and canals, the longer distance the less freight rates. On this principle, and to preserve a relative proportion to these charges on through freight from Lake Erie to Montreal, the toll would be two-thirds, say, of the combined rates, or 40 cents per ton, a little over mill per ton mile.

For the fiscal years 1882-83, the canal statistics show the following movement of eastward freight, in round numbers ;—

WELLAND CANAL.

Through tonnage from Lake Erie to Lake Ontario	256,000 tons.
Way tonnage down.....	64,000 "

ST. LAWRENCE CANALS.

Through tonnage from Lake Ontario to Montreal.....	233,000 tons.
Way tonnage down.....	180,000 "
Through tonnage from Lake Erie to Montreal.....	221,000 "

By the rate previously established, we would have :—

Welland Canal, through, 256,000 tons at 30c.....	\$ 76,800 00
" " way, 64,000 tons at 10c.....	6,400 00
St. Lawrence Canals, through, 233,000 tons at 30c.....	69,900 00
" " way, 180,000 tons at 10c.....	18,800 00
Lake Erie to Montreal, 221,000 tons at 40c.....	88,400 00
Total revenue.....	<u>\$259,500 00</u>

Total revenue collected on up and down tonnage in 1882 and 1883, Welland and St. Lawrence Canals, \$201,000. By this approximate calculation and rates, we have a revenue of some \$58,500 greater on the eastward tonnage than was collected on both westward and eastward tonnage, when this assumed rate is apportioned to the various classes of freight, either higher or lower, it would change to some degree the total amount of revenue, but would not affect the principle, as the rates could be so apportioned to the various classes to furnish the same revenue. No reference has been made to the tolls upon tonnage of vessels. Steam vessels now pay $1\frac{1}{2}$ cents per ton, each way, upon the Welland Canal, and $\frac{3}{4}$ cents each way, upon the St. Lawrence Canals, the toll might be fixed at 2 cents upon each section, one way, and free the other, and 3 cents through both. By the first method of collection on the tonnage of vessels, the same system could be adopted, a rate being made for each section, for vessels through both sections, and for way tonnage. The toll to be collected upon a vessel coming into a canal, either up or down. A let-pass could be given, allowing her to return free at any time during the season of navigation.

The Board of Works when the canals were first constructed collected the revenue and paid it over to what was then the Finance Department, in similar manner to the Intercolonial Railway at present. The revenue and statistics were subsequently under the Department of Customs as Trade and Navigation. After Confederation they came under the Department of Inland Revenue. Being handed around from one Department to another, there is no compilation of comparative statistics furnished each year of the business of canals, from the date of their construction, the revenues apportioned to each canal, and such a consecutive system that an intelligent conclusion could be formed of the trade and commerce of the canals, similar to the statistics of the New York canals. The revenue has been collected and changed about in a number of different ways, so that it is impossible to determine the comparative expenditure and revenue on each canal. The revenue was first collected from the Ordnance canals, embracing the Rideau and Ordnance canals on the Ottawa—the Ste. Ann's Lock—the St. Ours Lock and Chambly Canal, afterward from the Rideau and Ottawa combined, and now the Rideau and Ottawa Canals separately. On the St. Lawrence, the tolls, on the through tonnage which is free through one section from Lake Erie to Montreal, and *vice versa*, have been credited to the section where collected, on the down tonnage collected at the Welland being much greater than the up collected at Lachine, the St. Lawrence Canals have not their share of the revenue. It is only within the last two years that the movement has been discerned upon the St. Lawrence and Welland Canals into through, and way tonnage, on each section, and tonnage through both sections.

The St. Lawrence Canals should be separated from the Ottawa Canals; the traffic from the Ottawa Canals now swells the tonnage of the St. Lawrence Canals, merely passing through the Lachine or eight miles of the forty of canals. The two scales of navigation being different, it gives an erroneous impression of the tonnage of vessels on the St. Lawrence Canals. The tonnage on the Ottawa Canals should be separated from the St. Lawrence Canals. We would then have the revenue and statistics according to the scale of navigation. On this principle there would be the Rideau Canal, the Ottawa Canals, embracing the Lachine, that is all tonnage from the Ottawa through Lachine to be credited to the Ottawa system; the Richelieu navigation, the St. Lawrence system from Montreal to Lake Erie.

CONCLUDING REMARKS.

In concluding this report, I may refer in particular to a renewed agitation for the abolition of tolls at the opening of the present season of navigation.

In a memorial of the Montreal Corn Exchange Association, dated 20th May, 1884, it is stated: "That the St. Lawrence route has already lost, and as your memorialists believe, must continue to lose its normal share of the grain export trade of this Continent, unless the exceptional and onerous taxation is ameliorated." One of the imposts specified and given great prominence, are canal tolls; the others mentioned do not come within the province of the Department of Railways and Canals. Judging by remarks in the press of Montreal, it would be supposed that deducting

this 20 cents per ton toll, and with some other reductions, the grain would invariably and continually seek the St. Lawrence route for export, that the causes, since the opening of navigation, of the depression in the export grain business of Montreal, were local, or caused by numerous taxes. The great factors operative, are unconsidered. Of these factors, the principal are: First. Low prices and diminished exports. The average price of home-grown wheat per quarter, in 150 towns of England, has been lower this year than since 1780. Taking the last 33 years, the lowest average price for the year was: In 1851, 38s. 7d.; in 1852, 41s.; in 1864, 40s.; in 1883, 41s. 7d., and up to July, 1884, it averaged 37s. 4d. per quarter.

The exports from five Atlantic ports of wheat and corn, from 1st September to 12th July, 1883-84, were over 27,500,000 of bushels less than the corresponding period of 1882-83.

Second. Low rail rates.

Early in the year the railways commenced cutting rates—a reduction was ordered. From 20th March to 1st July, the rate was 15 cents per 100 lbs. from Chicago to New York, or 10 and 15 cents below the usual rates.

The effect of this reduction, during the season of navigation, may be seen from the through shipments, East from Chicago, during the three months of April, May and June.

	Tons.
1882.....	370,049
1883.....	443,987
1884.....	976,909

The railways have, therefore, carried the largest proportion of grain exported; and as Montreal, for some reason, either does not wish, or makes no endeavor, to obtain this rail business, consequently there has been little grain in Montreal to load vessels. The rates were raised on July 1st to 20 cents and on July 21st to 25 cents per 100 lbs., or \$2 per ton. It is stated that larger quantities of grain are now coming down the St. Lawrence, which no one will assert is caused by 10 cents per ton reduction in tolls.

All the figures given here are taken or compiled from various commercial papers and presumably sufficiently accurate for illustration. The deductions are merely a repetition in detail, and applicable to the present year, of what has been previously stated in this report. The receipts at Atlantic seaboard ports were, from the 24th December, 1883, to 19th July, 1884, 50,863,541 bushels of wheat and corn, and 78,578,019 bushels during the same period in 1882-83. The total exports of wheat and corn from five Atlantic ports were as follows, from the opening of navigation at Montreal to 12th July, 1884.

	Bushels.	Percentage.
New York.....	7,397,113	49.1
Baltimore.....	3,699,545	24.8
Montreal.....	1,537,244	10.4
Boston.....	1,266,992	8.4
Philadelphia.....	1,078,092	7.3

These exports will be divided into two classes, and discussed separately. That portion received at Atlantic ports by rail and by water:

During May and June, the rates on grain from Chicago to New York, Philadelphia and Baltimore were 15 cents, 13 cents and 12 cents per 100 pounds, respectively. The rate to Montreal is said to be the same as Philadelphia, or 2 cents less than to New York. The first ocean steamers to arrive at Montreal, could with difficulty, obtain grain to steady them on departing. The grain by the Erie Canal had only commenced to arrive at the end of the month of May; therefore, as nearly all the exportation of that month was carried by rail, the canal tolls cannot be said to have prevented a large quantity of grain from being put in store at Montreal, just previous to the opening of navigation, to load the first arrivals, nor with 40 cents per ton less freight rate than to New York to have exported as much as any of the other Atlantic ports.

From the daily papers the receipts at Montreal, of wheat and corn, from 1st May to 4th July, appears to be, by rail, 385,664 bushels. I find, during the month of May and June, that there was shipped east from Chicago by the Grand Trunk Railway 52,749 tons of grain or some 15 per cent. of the total quantity shipped by all the Trunk Lines. The description of grain is not specified; it might be over one and three-quarter million bushels, or more than the total quantity of wheat and corn exported from Montreal during these months.

Of the total exports, we may make an approximate illustration of the quantity exported, received by rail at five seaboard ports, say some seven and one-half million bushels of wheat and corn. Montreal, with rates in her favor over Boston of \$1.40 per ton, over New York 40 cents, Philadelphia equal, and 20 cents per ton greater than Baltimore, should not ascribe lack of business to canal tolls. The receipts of Baltimore are principally by the Baltimore and Ohio railway; the mileage from both that city and Montreal is practically the same to Chicago; the Grand Trunk Railway has carried east from that city, 52,749 tons of grain, a small quantity of which only is exported from Montreal, while to Baltimore there are over three and one-half million bushels of wheat and corn carried by rail and exported since the opening of navigation at Montreal. At Boston and Philadelphia over a million of bushels of wheat and corn received by rail in May and June, have been exported. Why there has not been as large a quantity received at Montreal by rail as at the two latter ports, cannot be attributed to canal tolls.

The receipts by water have not been small on the Canadian route alone, as shown by the following statement of receipts of wheat and corn by Erie Canal at tide water, and at Montreal by Lachine Canal from the opening of navigation to 4th July, in 1883 and 1884.

	Bushels. 1883.	Bushels. 1884.
Erie Canal.....	9,230,200	5,072,900
Lachine Canal	3,482,899	1,176,499

During May and June the receipts at Buffalo, of wheat and corn, were, in 1883, 15,713,980 bushels, and in 1884, 10,584,520 bushels.

To show, in addition to these figures, the effect of the low rail freights upon the transport on the Lakes and Erie Canal, the following figures of receipts of grain at New York in the month of June, 1883 and 1884, are given :

	1883.	1884.
	Bushels.	Bushels.
Canal.....	6,231,910	3,476,335
Rail.....	4,370,664	6,846,667
Total.....	<u>10 602,574</u>	<u>10,323,002</u>

Although there has not been a great decrease in the total receipts, that by canal, has fallen off nearly 50 per cent., while the rail receipts have increased some 2,500,000 bushels, in face of low prices and a light foreign demand.

That Montreal has been, during the months of May and June, if the rates had been correspondingly reduced on both water-routes, at no disadvantage with New York, may be seen by the following figures of rates of freight upon a ton of wheat:

Chicago to Buffalo, (lake), 900 miles at $\frac{7}{10}$ mills per ton mile.....	\$ 0 63
Buffalo charges, say.....	0 30
Lake insurance.....	0 20
Canal freight, 500 miles at $2\frac{1}{2}$ mills ton mile	1 16 $\frac{1}{2}$
Total.	<u>\$2 29$\frac{1}{2}$</u>

If we take the St. Lawrence route, and adding $\frac{3}{10}$ of a mill per ton mile for additional expense of navigating the Welland Canal :

Chicago to Kingston, 1,100 miles, at 1 mill ton mile.....	\$ 1 10
Insurance, Chicago to Montreal.....	40
Canal tolls.....	20
Kingston to Montreal, barge freight, 180 miles, at $2\frac{1}{2}$ mills ton mile.....	42
Total	<u>\$2 12</u>

Taking the all-rail routes we have :

Chicago to Montreal, at 13c. per 100 lbs	\$ 2 60
Chicago to New York, at 15c. " "	3 00

We thus see, as far as canal tolls are concerned, both in the past, as shown previously, and this season, if the freight rates are reduced correspondingly in dull times, they do not interfere with exports *via* Montreal, and as to terminal charges, they are less at Montreal than at New York

From the opening of navigation to the 19th July, the commercial papers report weekly the movement of wheat and corn from western lake ports. There appears to have been 1,146,730 bushels shipped to Montreal and Kingston, and 1,356,988 bushels to Ogdensburg, Oswego and Cape Vincent. The principal part of this was to Ogdensburg, and paid 40 cents per ton toll, that is the expense of lightening, in addition to

the 20 cents toll upon the Welland Canal. To Montreal and Kingston the toll was 10 cents per ton. Surely, if these American ports could pay full tolls and compete with the cut rates of the railways, the grain trade of Montreal would not have been ruined this season if there had not been a reduction in tolls, or if they are not abolished.

Perhaps never in the past nor in the future, until rates by rail are again as low, combined with light foreign demand, low prices and railways carrying below cost, will the slight effect of tolls be so clearly exemplified, as during this season from the opening of navigation to the 1st July, when the rail rate was raised, or we may say until the 21st July, when it was further raised to its normal rate.

It is quite obvious, that if with this conjunction, there was a greater movement to American ports, paying full toll, while down the St. Lawrence, there was a lighter paying half toll, it is merely a question of trade, and not of the slight tax levied for the maintenance of the canals.

The fallacy of laying stress upon canal tolls, is no better illustrated than in the differential rates between different seaboard cities. New York merchants complain that trade is being diverted to Philadelphia and Baltimore, the latter assert that New York wishes to monopolize the trade of the country, but still the differentials are maintained and the trade and commerce of these cities do not seem to be declining. Ships seek these ports, and their trade and commerce is governed by economic and commercial principles, and not because it costs to move a ton of grain from Chicago to Boston \$1.00 more than to New York, \$1.40 more than to Philadelphia, \$1.60 more than to Baltimore, or it costs New York 40 cents more than Philadelphia, and 60 cents more than Baltimore, or it costs Philadelphia 20 cents more than Baltimore.

This brings us to the differentials on the water-routes—20 cents toll per ton in favor of New York, while Montreal has 40 cents per ton in her favor by rail.

As to the 20 cents toll in the first place, considering economic transportation *per se*, without reference to trade and commerce, the St. Lawrence route is at present, including the tolls, and will be in a greater degree when the Welland Canal is deepened and the St. Lawrence Canals are enlarged, a much cheaper route for transport than the Erie Canal.

It is stated that grain is essential for ballast, the exports generally being between deck's cargoes. In New York and Boston the line steamships carry grain frequently for ballast, and at a nominal rate, not to invalidate the insurance. They also, when there is no grain being exported, buy it for ballast, and sell it upon the other side.

The shipping, arriving at Montreal, brings very little freight for the Western States; there is a very slight intercommunity of trade relations between Western United States lake ports and Montreal; if our own country is not able to support by its exports and imports, the ships which seek the St. Lawrence, too many may arrive. If the steamship lines wish grain for ballast, which cannot be grown in the country, they are at no disadvantage with those in New York; they, and their agents, can buy it at Chicago, from which place it can, either by rail or water, be laid down at Montreal as cheaply as southern ports.

This ineffectual striving in early days to obtain the transport of the American barrel of flour, and latterly the bushel of wheat or corn—when obtained, what are the profits to the country? The imports of the Western States have not sought this route; the principal portion of the grain is carried in American bottoms to Kingston, which sail across the lake and obtain a return cargo; it is transhipped and carried in barges, employing some labor, consisting of bargemen, shovellers, &c.; it arrives at Montreal, and there are certain commissions and charges which benefit a few people. To place that ton of grain in Montreal, it has perhaps cost the country \$1.00 in interest, and as previously stated, to move a ton of produce through the Welland and St. Lawrence Canals, costs nearly 50 cents for maintenance and repairs, or \$1.50 in all; it is now asked to shift this toll of 20 cents, less than the cost of passing the ton of wheat through the canals, from those who alone are interested and benefitted, to the general taxpayer who is already contributing \$1.00 per ton in interest.

Assuming that it is after the grain arrives in Montreal, that certain taxes, lack of facilities for handling a large business with economy and dispatch, higher ocean freight rates and insurance, or all the disadvantages that could be enumerated, which combined, would render this route more expensive for transportation than those to the South, the remittance of the toll upon one section as compensation of the expenses of the other, becomes a subsidy to the latter. This subsidy may be divided into that portion which compensates for deficiencies in the power of the Federal Government to remedy, and that which compensates for deficiencies which should be provided against by the enterprise of cities or individuals. With reference to the former, it has been the endeavor of the Federal Government, by the erection of lighthouses, telegraph and signal service, and other improvements, to render the Gulf and River St. Lawrence as safe a navigation as possible, but it can never change the climate, nor compensate for a long closing of navigation, or for higher insurance in spring and autumn, and consequently for higher ocean freight rates.

With reference to the latter, it becomes a transference of individual or corporate and sectional obligations to the Federal Government. In whatever light it is looked at, this abolition of tolls is a subsidy to obtain a foreign trade, that it has never been, or now is necessary, for the transport of our own productions, is evident by the fact that some 50 per cent. of the traffic of the Welland Canal has been American, if it can afford to pay full tolls, certainly the Canadian can.

From Chicago to New York is about the same distance by rail as to Quebec, it is just as logical for Halifax to ask that grain should be carried free from Chaudière Junction to that city, in winter, to enable her to compete with New York for the export grain trade, during that season, as for Montreal to ask that canal tolls be abolished to enable her to compete with southern cities in the summer. There can be no valid reason for this remission, if it is asked by the vessel interest, in order to compete with railways; if the latter can pay dividends after paying cost of operation,

and carry at such rates that vessels are unable to compete, without having the tolls, necessary for the maintenance of the canal through which they pass, abolished, omitting altogether the interest on the capital expended, then the canals had better be closed up or converted into water-power canals as the country is developed.

If the remission is necessary to divert trade from some rival route, give a direct subsidy to competing lines of steamers or vessels.

If the remission is necessary as a national benefit, to obtain the transport of any particular product, in the interest of any trade or section, make it a direct bounty, or say, grant a bounty of 20 cents on every ton of American grain that is exported by the St. Lawrence route. In this way there would be no necessity of obtaining a Parliamentary vote each year for the maintenance and repairs of the canals, under such a system, it is doubtful and highly improbable, if they could be as well and efficiently operated and maintained, as by a small tax imposed on the products transported through them.

It is generally conceded, that when the North-West becomes populated, it will be the greatest wheat producing section of the American Continent. It has been shown that the only economic transportation to the consuming markets of the Eastern part of this Continent and of Europe, is by the Great Lakes and River St. Lawrence.

For the markets of Europe, there are, as competitors, the sections of the country East, although not producing the same class of wheat, it can be marketed at the seaboard at a lower cost of transportation. The North-West wheat, although bringing a higher price for milling purposes than other descriptions, that price is relative, and if by competition of surplus wheat producing countries and good harvests in Great Britain, there will be, as experts appear to believe, a series of years of low prices; it will merely preserve its relative value with other grades. The longer distance this wheat has to be transported will neutralize the greater value, so that the producer in the West will not receive perhaps as high a price as one in the East for the lower grade of wheat.

In the crop year, ending September 1st, 1882, the imports from the principal countries into Great Britain, of wheat, were:—

	Cwt.
From the United States.....	33,603,325
“ British India.....	9,740,310
“ Russia	8,579,297
“ Germany.....	3,258,275
“ British North American.....	2,821,336
“ Australia.. ..	2,686,844

To the North-West the principal competition will be from British India. Great Britain is making every effort, by large expenditures for railways throughout that country, to enable its low priced labor and small cost of production to compete with this continent for the supply of wheat. The Indian Government intend, during the

next five years, expending £33,462,000 sterling in constructing new railways and improving those existing.

Another great competitor will be Russia, whose Government has, a few months ago, issued a loan of \$75,000,000 for the construction of thirteen new railways, which will decrease the cost of transporting grain to the markets of Europe, and make a formidable competitor to this continent. The United States Consul at Moscow states:—

"My opinion, after conversing with the leading grain dealers of Russia, is that the Russians are about to make a resolute and determined effort to regain at least a part of their lost prestige of supplying Europe with grain, and to this end they are now large buyers of agricultural implements to facilitate the development of their crops; they are erecting grain elevators and, in fact, are adopting our ideas in general, to accomplish the desired result."

With these facts in view, it is open to question whether, if prices in Europe have a permanent depression, the eastern part of this continent will not be a better market for North-West grain than Great Britain.

The deficiency of the Maritime Provinces, the Eastern and Middle States, might be taken at 40,000,000 bushels per annum, or nearly as great as the exports of the continent to Great Britain. In whatever light the question may be viewed, cheap transportation is of paramount importance to the North-West. It is not settled by railway from Port Arthur or by lake and rail, no more than it is by railways from Duluth, Milwaukee and Chicago, and other ports from which it has been shown the principal part of the grain is shipped by lake, but it will be afforded when a greater depth of water is obtained in the Welland Canal, and those of the St. Lawrence Canals, yet to be enlarged, are completed. The Vice-President of the Canadian Pacific Railway estimates that in two years there will be a surplus of 10,000,000 bushels to be shipped east, and it is stated that the present freight rates, including elevator charges, is $27\frac{1}{2}$ cents per bushel from Winnipeg to Montreal, lake and rail; this is a low rate. By the enlarged canal system it should be transported for 18 cents per bushel, allowing 70 per cent. to take the all-water route, the remainder all-rail or lake and rail, we would have on the 7,000,000 bushels, a saving of \$665,000 in the cost of transportation, or the interest at 4 per cent. of over \$16,500,000, greater than half the estimate for enlarging the Welland and St. Lawrence Canals.

Although the movement of grain through the Welland Canal has been light this year, during the months of May and June, six propellers, in twelve trips, transported, principally to Ogdensburg, 586,649 bushels of grain, 181,433 bushels of which required to be lightened some 30 per cent., at a cost of \$3,376.61.

This season of navigation has been one of the most crucial tests of the transport by waterways, as compared with railways. The former have had to carry at such rates as would preclude a profit, through the competition of the numerous competing through lines and the low rates of transport. It would appear that rates based on a rate of 15 cents for 100 lbs., from Chicago to New York, would offer a serious competition to the water-ways. The following figures are compiled from the *New*

York Produce Exchange Weekly, in which the movement from western lake and river ports is given each week. The shipments, by water, include those down the Mississippi. The figures include the shipments from the opening of navigation to 9th July, 1883, and to 5th July, 1884:

	1883.	1884.	Per-centage.	Per-centage.
	Bushels.	Bushels.		
By water.....	29,686,234	21,527,969	76.5	54.4
" rail	7,805,574	18,064,333	23.5	45.6
Total	37,471,808	39,592,302	100.00	100.00

The rate in 1883 was 25 cents per 100 lbs., so that it appears to be the effect of 10 cents reduction to materially reduce the shipments by water. The effect of these low rates may be seen by the depreciation in value of railway stocks; in the failure to pay dividends. It is generally conceded that the roads would not have lost so heavily if they had maintained rates and allowed the water-ways to transport the quantity which had been diverted from them.

The rates for the carriage of grain are lower upon American railways than in other countries, where they confine themselves to the carriage of products which naturally and economically belong to them.

The following statement gives some of the charges per ton mile for the carriage of grain upon this continent and Europe:—

Great Britain.

	Cts.
North British Railway..... 169 miles at 1.60 per ton mile.	
Great Northern Railway..... 190 " 2.00 "	
Great Southern and Western Railway..... 250 " 1.40 "	

The Continent.

France—Northern Railway	186 miles, at 2.78 per ton mile.
Belgium—State "	200 " 0.84 "
Holland—State "	240 " 1.52 "
Saxony—State "	250 " 3.28 "
Belgium—State "	250 " 0.74 "
Sweden—State "	500 " 2.18 "
Austria—Southern "	500 " 2.06 "

America—West of the Mississippi.

Chicago, Rock Island and Pacific R.R	183 miles, at 1.53 per ton mile.
" " "	358 " 1.40 "
" " "	500 " 1.00 "

America—East of the Mississippi.

Lake Shore and Michigan Southern.....	183 miles, at	0.87 per ton mile.	
Michigan Central.....	285	"	0.70 "
"	345	"	0.60 "
"	520	"	0.60 "
Baltimore and Ohio.....	494	"	0.63 "
"	609	"	0.54 "
"	840	"	0.53 "
Canada—State Railway.....	686	"	0.612 "
Chicago to New York (regular rates).....	980	"	0.510 "
Chicago to New York (cut rates).....	980	"	0.306 "

Water Transport.

Detroit to Buffalo	255 miles, at	0.260 per ton mile.	
Chicago to Buffalo.....	900	"	0.125 "
" (cut rates)	900	"	0.060 "

The above figures show that in Belgium, with its State system of railways, there is the cheapest transport in Europe, and that transportation by rail, upon this continent, is lower than in Europe. The low transport by water can never be approached by the railways.

On this continent, if the State had constructed the railways and operated them for the benefit of the people, affording the cheapest transportation and the most economic return to the State for capital invested, they would have been built as feeders to the waterways, the principal of which are the great lakes, the River St. Lawrence and the Mississippi. Instead of the ruinous competitions engendered by the multiplication of competitive through lines, of the sinking of capital in unprofitable and unnecessary lines, of railway manipulation and management, which has injured the reputation of America with the capitalists of Europe, we would have the water-ways transporting, in summer, those products which economically belong to them, a sufficient number of trunk lines for the requirements of passenger and light freight traffic, and the business which would be necessary to be done during the months that navigation is closed on the northern water-ways.

Having referred to several subjects pertaining to this enquiry, it is hoped it has been demonstrated that in the interest of the St. Lawrence route, and for the conservation of the trade and commerce of Canada through its natural water-way, an increased depth of water in the Welland Canal is an immediate necessity; that with tolls and deeper water the cost of transport would be less than with free canals and the present scale of navigation (12 feet); that the present tolls are of no moment and do not enter into the question either of cheap transportation, increased traffic or the direction of trade upon the canals; that there are other causes of greater potency influencing both the direction and volume of trade.

This decade is the only period in the last half century where the large expenditure made upon the St. Lawrence route could be asserted to be, or would become, necessary for the transport of our own productions. Some fifty years past the canal system, comprising the original Welland Canal, the Rideau and Ottawa Canals, and the first Lachine Canal, was sufficient to transport all the products of Canada moved by the canals to the present time.

The expenditure upon this route has not achieved the objects intended ; from it the Western States, indirectly, have derived the chief advantages, by the cheapening of transport through Southern routes on account of an alternative and competing route being available.

By the settlement and development of the North-West, an enlarged canal system or national waterway, of the largest capacity, becomes, for the first time, indispensable, for the transport through our own country of the future surplus products, and for preventing the diversion through a foreign country of the trade and commerce of this immense territory, to open up and populate which, the older Canada has expended, and is expending, large sums of money. The only practical outlet for surplus cereals is Port Arthur and Duluth ; the only cheap transport is by large propellers and vessels to Montreal, or Buffalo and by Erie Canal to New York.

The Americans have a magnificent lake marine of the largest class of vessels, to which are being constantly added iron and steel propellers, fitted up with the most approved appliances and machinery, all of which will be unable to pass below the foot of Lake Erie loaded.

It is an imperative necessity, before this movement of products becomes considerable, and its direction influenced, that the foot of inland navigation be extended from Buffalo and the east of Lake Erie to Montreal or Quebec ; that propellers with 2,000 tons of cargo be enabled to steam alongside the ocean vessels at these ports.

If such is not accomplished, the present enlargement will be as ineffectual and as inefficient to secure the trade of this territory as the former was in obtaining that of the Western States.

If the increased depth of water, the pivot point upon which the success of this route turns, is not afforded, and the improvements upon this waterway do not keep pace with the construction of the Canadian Pacific Railway and the settlement of the country, the trade and commerce of Manitoba and the North-West will seek foreign channels eastward, by Duluth, Buffalo and New York, or southward, to Minneapolis, Milwaukee and Chicago.

Form No. 364.

Welland
St. Lawrence

Damages
200.00
435.56

Department of Railways and Canals,

(Canals Revenue Branch.)

Canal Office,

190.

Tolls.

Trains

Wharfe

Wharf

H. Dues

\$98,842.10

Welland

\$98,601.50

50.00

2.68

5.48

182.46

\$98,842.10

St. Lawrence

65,081.11

\$331.19

829.84

5

22.50

447.40

1755.22

134.76

41,587.02

Chambly

22,713.31

10.00

OK

22,723.31

Murray

1,060.80

\$10.00

OK

1,070.80

Ottawa

24,852.37

\$10.00

OK

24,862.37

Rideau

3,831.15

1.68

\$5

51.88

108

\$40.00

OK

4,037.71

St. Peters

3,034.14

2,934.14

Trent Valley

1,328.98

10.00

31.50

OK

1,370.48

Sault Ste. Marie

50.00

220,758.90

STATEMENT.

Showing Movement of Flour, Grain and Flax Seed during the year 1902.

RECEIPTS.

BY	FLOUR BARRELS	WHEAT BUSHELS	FLAX SEED BUSHELS	BARLEY BUSHELS	OATS BUSHELS	RYE BUSHELS	CORN BUSHELS	TOTAL GRAIN & FLAX SEED BUSHELS
G. N. RY. CO.		23,107,265	8,795,912	4,474,380	439,285	201,524	1,672	37,020,038
N. P. " "		16,145,473	6,937,035	704,189	504,435	243,332	3,902	24,538,366
" " " (in bond)		2,970,942	9,100	17,440	14,839			3,012,321
Omaha " "		172,185	390,270	355,152	322,790	327,819	40,134	1,608,350
Total Receipts	6,907,765	42,395,865	16,132,317	5,551,161	1,281,349	772,675	45,708	66,179,075
Flour Mfd. in Duluth and Superior	1,809,620							
In Store, Dec. 31st, 1901	18,420	10,746,741	1,152,718	254,199	137,218	438,068	379,483	13,108,427
Afloat Dec. 31st, 1901		510,748	391,986					902,734
Grand Total	8,735,805	53,653,354	17,677,021	5,805,360	1,418,567	1,210,743	425,191	80,190,236

SHIPMENTS.

TO	FLOUR BARRELS	WHEAT BUSHELS	FLAX SEED BUSHELS	BARLEY BUSHELS	OATS BUSHELS	RYE BUSHELS	CORN BUSHELS	TOTAL GRAIN & FLAX SEED BUSHELS
American Ports—								
Buffalo		30,182,565	10,566,451	4,707,805	716,411	1,080,343	44,360	47,297,935
Chicago		1,905,908	1,298,161					3,204,069
Erie		982,000		76,861				1,058,861
Detroit		663,005		230,000				893,005
Cleveland		309,000	353,280					662,280
Toledo			666,428					666,428
Port Huron		261,504	20,207					281,711
Ogdensburg		231,000						231,000
Milwaukee		202,000						202,000
Fairport			61,740					61,740
Total American Ports		34,736,982	12,966,267	5,014,666	716,411	1,080,343	44,360	54,559,029
Canadian Ports—								
Depot Harbor		3,591,431	581,336					4,172,767
Midland		1,632,531			252,453	95,500	26,412	2,006,896
Meaford		1,065,095						1,065,097
Quebec		574,975						574,975
Owen Sound		101,500	78,400					179,900
Gooderich		100,000						100,000
Kingston		58,348						58,348
Sarnia		19,636	154,145					173,781
Total Canadian Ports		7,143,518	813,881		252,453	95,500	26,412	8,331,764
Grand Total by Lake	8,703,330	41,880,500	13,780,148	5,014,666	968,864	1,175,843	70,772	62,890,793
Consumption Local Mills From Elev.		2,302,752						2,302,752
" " " Off Track		5,377,930						5,377,930
Rail		235,286	1,001,328	456,029	231,543	3,557	353,174	2,280,917
Total Shipments	8,703,330	49,796,468	14,781,476	5,470,695	1,200,407	1,179,400	423,946	72,852,392
In Store Dec. 31st, 1902	32,475	3,856,886	2,895,545	334,665	218,160	31,343	1,245	7,337,844
Grand Total	8,735,805	53,653,354	17,667,021	5,805,360	1,418,567	1,210,743	425,191	80,190,236

Arrival and Departure Record:

First arrival Steamer F. R. Buell, Sunday, April 6th, 3:00 A.M., 1902.

First departure Steamer Fred B. Wells, Monday, March 31st, 7:40 A. M., 1902.

Last arrival Steamer Jno. W. Gates, Thursday, Dec. 18th, 1902

Last departure Steamer New York, Monday, Dec. 8th, 1902.

Number of vessels entering at Duluth-Superior, 7,944, tonnage 11,861,080.

Number of vessels departing at Duluth-Superior, 7,922, tonnage 11,950,195.

Total arrivals and departures at Duluth-Superior, 15,866, total tonnage 23,811,275.